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Southern Medical Journal

Journal of The Southern Medical Association

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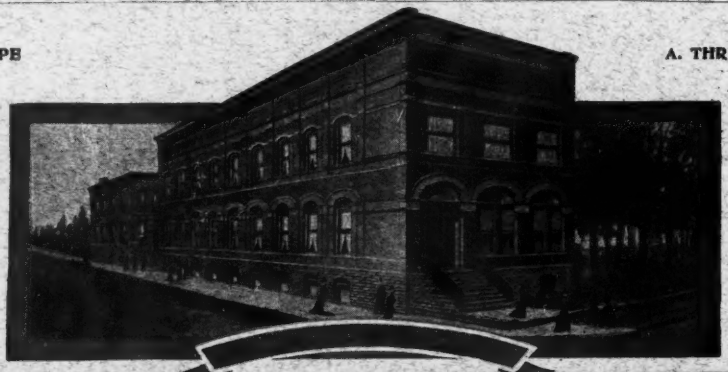

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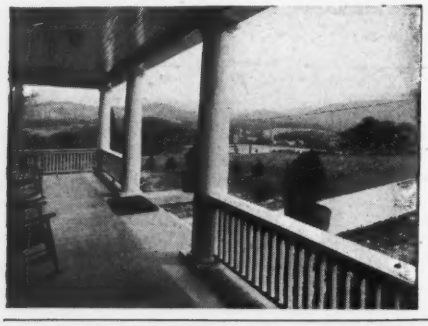

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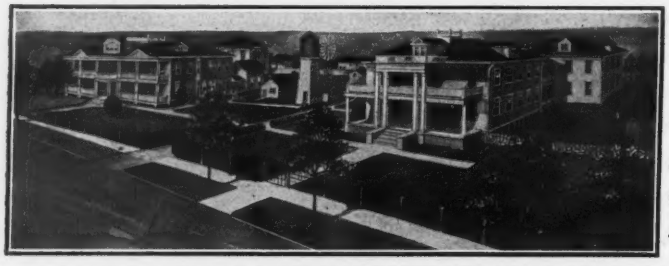

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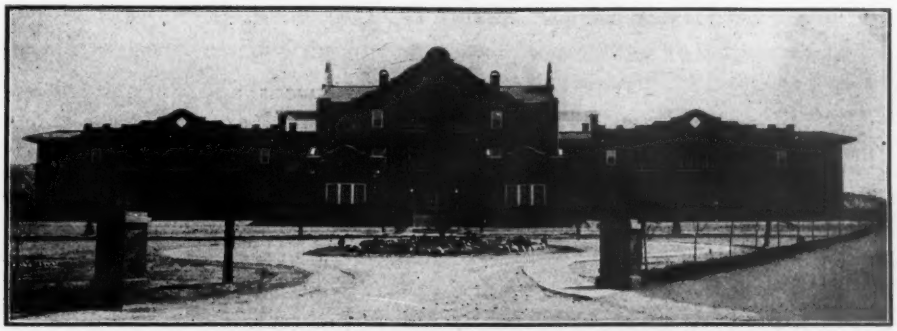

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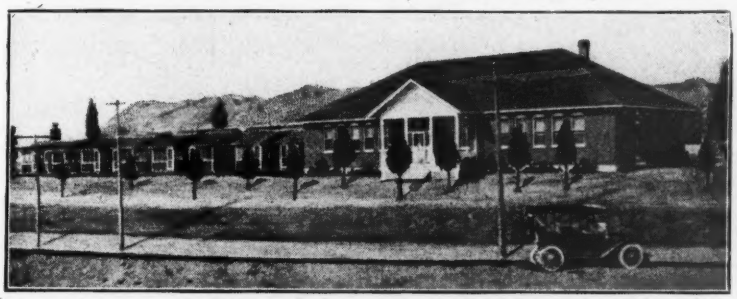

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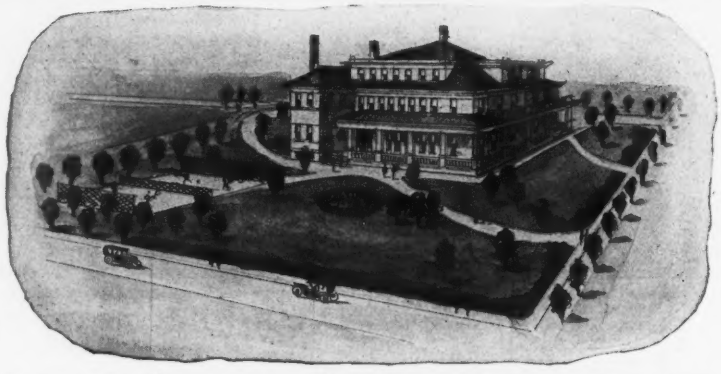

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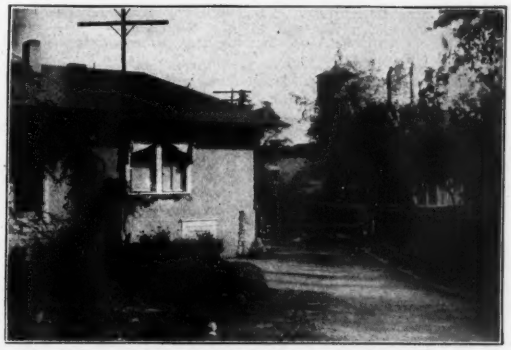

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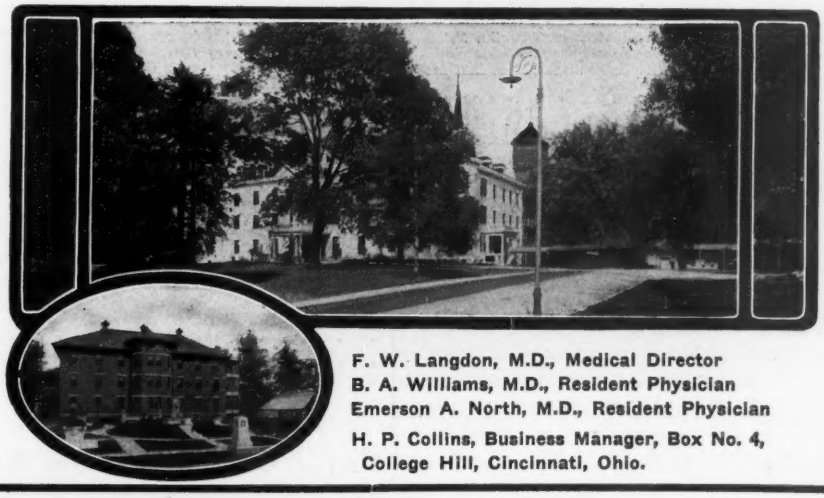

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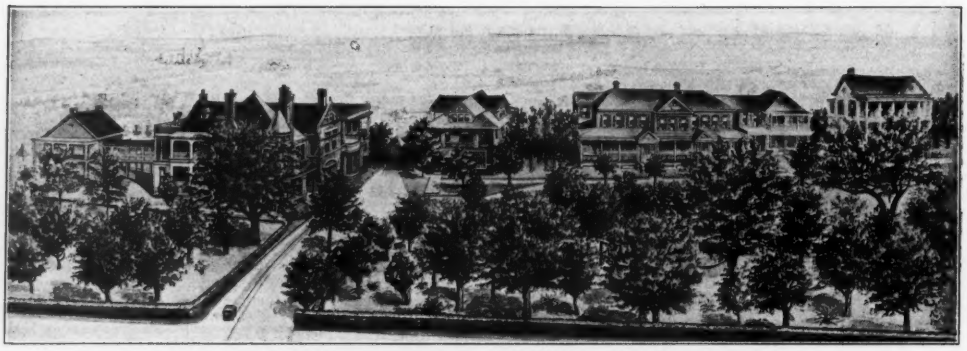

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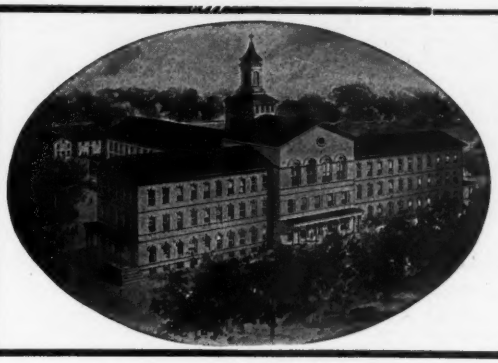

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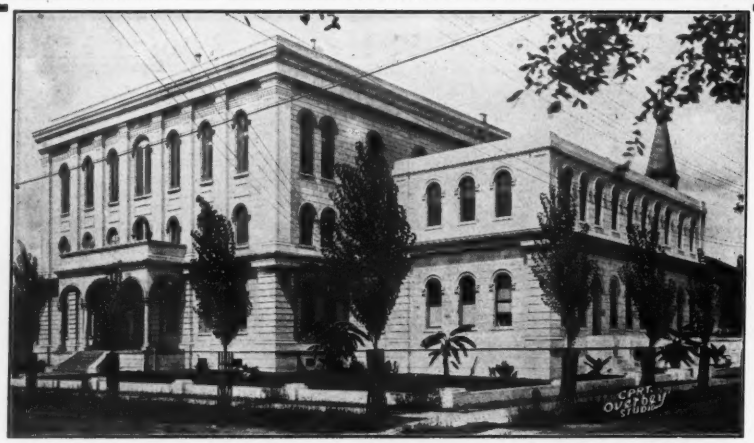

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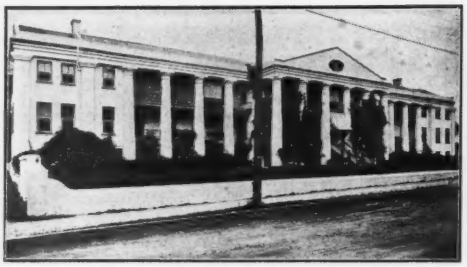

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MEDICINE

(INTERNAL DISEASES, PEDIATRICS, NEUROLOGY, DIAGNOSTIC METHODS, ETC.)

THE ALLEN TREATMENT OF DIABETES BY FASTING.*

By Isaac Ivan Lemann, M.D.
Professor of Clinical Medicine Tulane University of Louisiana
New Orleans, La.

The plan which Allen has proposed for the treatment of diabetes, based upon the results of his experimental work upon dogs, has been before the medical public now nearly eighteen months. During that time considerable experience with it has been accumulated. Allen and Joslin have reported upon fairly large series of cases. Hill and Sherrick reported seven cases. Probably others would be able to report upon similar small series. In view of the radical principles laid down by Allen it would seem wise that all who have had any experience with the method should report their results and their impressions of the validity of Allen's claims and that the subject should be presented for discussion at such meetings as this. The present paper is presented in this spirit.

Allen found that he could produce in dogs a diabetes of varying intensity by removing a greater or less portion of the pancreas. No matter what degree of severity marked the disease produced, it was made worse by putting on that part of the pancreas remaining a functional strain greater than its capacity to bear. Per contra the severity of the disease was favorably influenced by protecting the pancreatic internal secretion function from such an undue strain. Thus a dog whose pancreas had been damaged to the extent that the animal would become glycosuric only after the ingestion of large amounts of carbohydrate could be kept in this favorable condition if this tolerance was respected, whereas if he was permitted to disregard it, his tolerance would sink to a lower level. All this is in consonance with clinical observations in the human and with the teachings of Naunyn and Van Noorden in particular in regard to treatment. Allen's first contribution to our conception of diabetic conditions lies in his emphasis of the importance of this physiologic strain as contrasted with that of the actual anatomic damage probably lying at the root of the trouble.

His next contribution to the treatment of human diabetes is also based upon his dog and cat experiments. He found that he was able to make every animal aglycosuric, even those of the severest types of diabetes, by starving them. This period of starvation varied in length from one day to a number of days. The animals having become aglycosuric were kept so by a rigid restriction of their diet within their point of tolerance even where this was low. Allen observed that the animals so maintained aglycosuric, while thin were otherwise apparently normal and lively and contrasted favorably with control animals who were permitted to eat ad libitum and exceed their tolerance. In the end the control animals were feeble and apathetic, even when their nutrition apparently exceeded that of their restricted comrades.

Allen's belief is that we have been

*Read in Section on Medicine, Southern Medical Association, Ninth Annual Meeting, Dallas, Texas, Nov. 8-11, 1915.

wrong in trying to maintain or increase the weight of our diabetic patients where glycosuria persists, for such attempts simply keep the body at a size beyond the capacity of the pancreas to provide sufficient internal secretion for it. Better, therefore, to have the body thinner and have enough pancreatic secretion to do the work of the smaller body. This pancreatic internal secretion he would have us conceive as an amboceptor binding blood-sugar to the tissues. When the amboceptor is lacking the unbound sugar is secreted by the kidneys.

Allen's proposals then are: 1. To starve the patient until his urine is sugar-free. 2. To add gradually to his diet until his point of tolerance of protein and fat, as well as of carbohydrate, is reached. 3. To remain within these points of tolerance, no matter how low they may be and no matter how thin the patient may be. Attempts to increase the patient's weight by the addition of large numbers of fat calories to the diet results in the return of the glycosuria.

The proposal of starvation days is of course not new. Van Noorden particularly has made use of them in connection with his oat meal cures. Allen's technique is different, however, his basic conception radically different; his claims for his method flatly contradict former theories. Thus the much dreaded ketonuria and acidosis hitherto regarded as precipitated by starving diabetics, he claims is averted, and when present is reduced by his starvation method.

Certainly his proposal to reduce the weight of our patients and permanently thin is the very opposite of everything we have been taught up to now. The weighing machine has been regarded as essential in the handling of diabetes as the thermometer in the treatment of fever, and we have endeavored to maintain or improve the nutrition of diabetic patients, considering this secondary in importance only to keeping them aglycosuric.

My short experience with Allen's method, embracing now five cases, has served to free me of the fear of precipitating a severe acidosis by the sudden starvation; and, secondly, it has convinced me in one severe case, which I shall presently describe, of its great possibilities in certain cases at least. The other four cases were mild. Two of them I had tried in vain to bring aglycosuric by gradual reduction of carbohydrate intake, then of protein intake and finally, in one of them, by the interposition of green days. These two patients became aglycosuric in twenty-four and forty-eight hours of starvation, respectively. The other two mild cases required twenty-four and seventy-two hours' starvation, respectively. In none of these four did acetone appear in the urine. None of the patients had any serious complaint; in fact, they seemed to suffer rather less from the pangs of hunger than would the average normal individual. This was quite a revelation to one who is accustomed to the usual immense appetite of diabetics. Not only was the disappearance of the glycosuria brought about more promptly and with less trouble both to the patient and to me than by the former technique, but it was possible to build up for each of these patients quite a livable diet and still maintain their aglycosuria. In the two patients whose points of tolerance I had tried to determine by the older method, I found the new tolerance quite satisfactory and far in excess of what it had been prior to the fast. I regret, however, to have to report that it was impossible to convince two of my patients with mild diabetes of the necessity of remaining within the limit set for them and they have again had sugar in their urine. It must be emphasized, however, that this is no fault of the method, for the dietary in both instances, as worked out after the fast, was one that was quite livable in all respects and allowed a large latitude in quantity and variety.

The severe case which I have already mentioned was the most instructive.

A woman of fifty-three years had noticed at Easter time, 1915, "a painless but obstinate ulceration on the planter surface of both great toes." For this she consulted her family physician, who at once suspected diabetes and promptly confirmed his diagnosis by finding sugar in considerable quantity in the urine. He wrote me that he was afraid, however, to put her at once on a strict anti-diabetic diet because she had been having recurring attacks of fever. The perforating ulcers improved for a while under local treatment. The patient, however, continued to

lose weight. On July 19, 1915, she was referred to me and was brought to New Orleans from her home sixty miles distant. Just prior to that time she had taken a turn for the worse, had fever again and "one of the ulcerated toes became acutely inflamed and began to discharge." The patient gave a previous history that is entirely without interest except for the following points: Seven years ago she weighed 220 pounds and she had been losing weight steadily since, so that she now weighed (July, 1915), approximately 150 pounds. For a number of years she had observed a numbness in both hands and feet. In 1912 she had pain in the epigastrium for two months. At the beginning of the present illness she again had pain in the epigastrium. Physical examination upon her admission to the Hotel Dieu, July 19, 1915, showed an infected perforating ulcer of the left great toe, which was enlarged to twice its normal size. On the planter surface there was a bluish purplish discoloration. The dorsum of the foot was dusky red and there was pitting extending up to a little beyond the ankle. The perforating ulcer on the right great toe was entirely healed. The patient's temperature was 102.8 and the pulse 120. The general examination revealed nothing else of importance. The urine showed 2% sugar, 3% albumen (moist), and strong diacetic and acetone reactions, many casts. In the view of the spreading infection and the associated gangrene which showed further advance next morning, an immediate amputation was advised. This was acceded to and Dr. Marion Souchon amputated below the knee. Following the amputation a fast was inaugurated. Since the ketonuria was extremely marked, bicarbonate of soda was given by mouth and also a number of times by intravenous infusion. It was extremely gratifying to observe the gradual disappearance of the sugar and of the ketone bodies from the urine. Formerly I would have been timorous about the fast under the conditions existing and would have insisted upon giving some carbohydrate food. As it was, the outcome was extremely dubious, for the patient remained septic for a number of days. Once she was sugar-free, however, and she was started upon the gradually increasing diet, she made remarkable progress.

In the skin flaps of the amputation there was at first some recurrent gangrene, but this very promptly delimited itself. Except for this and a slight amount of sloughing of the muscle flaps the stump did very well. The patient was discharged after a month, leaving the hospital on crutches in an excellent condition.

All abnormalities had disappeared from the urine. The diet which she was instructed to follow included a liberal allowance of vegetables and meat and a modicum of bread. A recent letter from her physician reports that she is still free from sugar and that she continues to improve.

In going over some of my older cases in the light of Allen's recommendation to keep diabetics thin I have been struck by the fact that there seems to be some good clinical basis to support his contention. Some fat diabetics have found, as it were, their own level. I mean by this that they have lost weight until they have ceased to be obese and at the same time they seem to have reached a point where they are maintained aglycosuric with considerable less trouble to themselves in the way of diet restrictions as well as to their physician. For some years it has been my custom when temporarily discharging a diabetic to tell him to weigh frequently and to report whenever he found that he gained or lost more than a certain number of pounds.

In conclusion, my brief experience with the method has been sufficiently satisfactory and enlightening to encourage me to proceed. What the end results will be in after years remains, as Joslin has pointed out, to be seen. The difficulties of the starvation plan are not as great as would at first appear. While I would prefer to have my patients in a hospital, still I would not hesitate to carry out the regime in a private home, provided I have the intelligent, sincere co-operation of the patient and the housekeeper. I have done so without difficulty. What is essential, as it always has been essential, in the treatment of diabetes is the willingness of the physician to take pains in the individualization of the handling of his patients. No schematic arrangement will entirely fit every case. To this willingness must be added of course some knowledge of the composition of foods and their caloric values. This knowledge is best obtained and best added to by constantly treating patients with our diet tables before us, daily computing out the diet we propose to prescribe. Such familiarity with the tables finally makes them our own.

In the following discussion reference is made to Dr. McLester's paper. This was the oration on medicine entitled "Glycosurias," by Dr. James S.

McLester, Birmingham, Ala., and appeared in our February issue, pp. 99-106.

DISCUSSIONS

Papers of Drs. McLester and Lemann.

Dr. Allan Eustis, New Orleans, La.—Both of these papers have been extremely interesting to me, and both of them carry a message which we should all take home with us.

There is one point Dr. McLester brought out which I think is at the basis of Allen's success. He spoke of the detoxicating power against proteolytic poisons which the organism possesses, these poisons originating from unoxidized proteid material. The aromatic group found in the breaking up of the proteid molecule is detoxicated by combining with a sulphuric acid radicle and potassium. As Croftan has shown, when the sulphuric acid radicle is no longer available, or when the demands upon it are too great, nature attempts to neutralize the aromatic poisons by combining them with acetic acid or glycuronic acid. This latter substance is formed from glucose by partial oxidation, and it is conceivable, according to Croftan, that a vicious cycle may be set up by over-stimulation of the partial oxidation of glucose, due to an excess of intestinal poisons. We have all in the past overlooked the necessity of regulating the protein metabolism in our efforts to overcome the glycosuria. I have persistently for a number of years urged the importance of considering the protein metabolism of diabetics, and before the Louisiana State Medical Society in 1913 I attempted to classify acidosis into an endogenous and an exogenous type, and I still believe that the exogenous, or that produced from an over-indulgence in protein foods, is the most severe.

In diabetes it has been my practice in the last six years to consider diabetic acidosis or coma due to substances taken in by the intestinal canal over the power of the body to oxidize, and my clinical experience bears out Allen's teaching. However, in my opinion, he goes too far, because there are a number of these cases that can be kept in excellent health and gain in weight, and yet have a little sugar in the urine. The sugar never kills these patients, and I think that instead of adopting a routine treatment for all cases of diabetes, each individual should be considered separately. I have patients going around whom I have kept under observation for four years, who are yielding from 18 to 30 grams of glucose a day. They feel well, keep their weight, and were it not for the urine examination one would not regard them as ill. If I were to attempt to eliminate that sugar, they would at once become sick men and be unable to attend to their duties. Their sugar comes from a certain amount of proteid which is necessary for their cell metabolism, and I can not get them sugar-free without getting them so weak that they are incapacitated.

Dr. John R. Lehmann, Dallas, Texas.—Those of you who are familiar with the publications of Dr. Allen feel about his reports as I do, namely, that they offer a great deal of encouragement to us in the treatment of our diabetic cases. Dr. Allen reports that his treatment in his own hands has been so successful that patients are glad to co-operate with him.

Diabetes to me used to be a bugbear. I used to say, "Oh, my, think now of having to work out a diet for a diabetic patient, and of constantly watching to see that somebody does not pass something to him that they should not." All this requires constant vigilance with the possibility of failure under these circumstances. As I have said, Dr. Allen reports that patients are not only willing but glad to carry out this treatment; he is able to explain it to them and point out the reasons why these things are done in such a way, and they not only see the reasonableness of it theoretically, but they also, because of the immediate results, are able to see the reasons practically and therefore co-operate in the work. That, it seems to me, is one of the strong things to be said for the Allen treatment. These patients co-operate immediately and completely, and therefore the treatment is successful.

I wish briefly to report a case in connection with this paper about which I am not clear. This was a case which was observed first in the outdoor clinic of the Baylor University School of Medicine, and sugar was found. The patient came primarily for an ulcer upon his nose and one upon his neck. Had there not been two, they might have been considered as neoplastic. I do not know yet exactly the nature of them. Also they may have been considered diabetic, although I am not sure it was a case of diabetes, and I will tell you why: This man was reported on two successive days in the outdoor clinic as having sugar in his urine. He was sent to the Municipal Hospital of the city for the purpose of carrying out the Allen treatment on him, if it were possible. He was starved, given absolutely nothing but water for seventy-two hours, and then he rebelled so strongly the starvation had to be discontinued, although he was not at that time sugar-free. But the interesting point to me was that he did not become sugar-free on absolute starvation, so far as we could tell; nevertheless, when put on a general diet before the starvation was started to determine whether there was a glycosuria or a general diet, and if so how much, on one or two days he had no sugar. He left the hospital before observations were completed. He was a waiter in a restaurant and had access to all kinds of food. I asked him to report at the office for several days until I could determine whether he had permanent glycosuria or whether there had been deficiency in observation. He was apparently on a general diet, although he said he was following out my directions. Once during three successive days he showed no sugar in his urine; there was a reducing substance, but it could not be called sugar. On the other two days he had a definite sugar reaction.

Another feature of his case was some temperature and the presence of pus in his urine, and the question arose in my mind whether, with intermittent glycosuria and with manifestations of kidney irritation, that man actually had diabetes. On the other hand, when the man was put on starvation diet for seventy-two hours, he had a heavy sugar precipitate during all that time, but

did he or did he not have diabetes? I should like to propound that question to the members in this discussion this morning for their thought and opinion.

Dr. M. L. Graves, Galveston, Texas.—I regret very much that I was not able to hear all of these papers, and I was not able to hear all of the points brought out by Dr. Lemann in his valuable contribution.

For the information of those who have not read the most recent information upon this subject, I will say that you will find in the American Journal of the Medical Sciences two articles—one by Frederick M. Allen and one by Dr. Elliott Joslin, who discussed the subject from the standpoint of Allen's hypothesis, and the practical application by Joslin in clinical cases, including the dietary with the proteid and carbohydrate and fat caloric values of foods.

I wish to say, first of all, that cures should not be reported of diabetes until it is certainly proven a case of pancreatic disease. Cases of glycosuria are reported everywhere in people, forty-five and fifty years of age, of the fatty type which will reduce Fehling solution, and who get well with proper diet and exercise. They do not belong to the class of pancreatic diabetes. If you use Benedict's solution in making tests of the urine you will not cause a precipitate with the glycuronic acid compounds as Fehling's solution will do.

I do not believe diabetic cases come to us early enough for a very successful therapy either with diet or with anything else.

As has been stated by one of the gentlemen, the presence of sugar in the urine is merely a symptom. There must be a preceding hyperglycemia. If we could determine before the sugar appears in the urine the causes of sugar in the blood we might anticipate this disease and cure it before it has such a well established hold upon the patient. With the newer methods of duodenal examination with the duodenal tube, with the examination of the pancreatic ferments, and examination of the stools and urine, and the blood itself, we may be able to arrive at some earlier diagnosis than the presence of sugar in the urine. A large number of these patients do not get to us until they have lost so much weight, until they have marked polyuria, or glycosuria to such a degree that the treatment by the Allen method or any other method is wholly unsatisfactory and unsuccessful.

I want to say to Dr. Eustis, I do not believe his patient is well. His statement is entirely unjustified. He may have a case of pancreatic diabetes that has been excreting urine for ten years, but that patient is not well, and if it is not really a case of the alimentary fatty type he will find one of these days that his patient will develop acidosis coma or a marked increase of his symptoms and die of genuine pancreatic diabetes.

In this connection I would like to call attention to an experience I had recently, suggested perhaps by an unusual pancreatic origin of such disease. I had a woman under my observation who had everything she ought to have in life. She was very stout. She developed cardio-vascular disease between forty and fifty years of age, and then a general anasarca. That was not difficult to relieve by rest in bed and improvement of her heart symptoms, and while under my observation she developed an intense pain in her back with sugar in her urine, after I had known her to be sugar free for ninety days. This sugar persisted, and we could not find any cause for it nor for the pain in her back. I had a laparotomy performed and found a malignant growth in the pancreas about the size of a small hen's egg. The diabetes continued until the patient died in acidosis coma.

One of the peculiar symptoms this patient developed was a rapid growth of hair upon the upper lip and chin. These hairs were removed with an electric needle, and two hairs seemed to grow for every one that was taken out, so that at the patient's death she had a well-developed mustache and a marked growth of hair on the chin. It is the only case of that kind I have run across in which the pancreas has been so diseased, and in which we were able to find the actual local lesion in the pancreas.

Dr. James S. McLester, Birmingham, Ala.—I want to say a word of appreciation of Dr. Lemann's paper, because I feel that it is the most important communication upon the program.

In the past year I have treated by the Allen method eight cases. It is too early to estimate ultimate results. It may be that diabetes is a slowly progressive disease and that treatment can at best arrest its course only for a time. Still, it seems to me that Allen's treatment promises more than anything else and that if anything which we now have can permanently arrest the course of diabetes mellitus, this method of Allen's offers most.

The experimental work of Allen shows very clearly that the islet cells degenerate when overstimulated by the presence of an excess of sugar in the blood, and if, by appropriate diet with consequent rest, they will regenerate.

The patient who starts upon the Allen treatment and later abuses his liberties through excessive diet is worse off than he was at first. Excessive emotion and nervous excitement will, in my experience, influence unfavorably the course of diabetes. These two precautions should, I feel, always be borne in mind.

Dr. Isaac Ivan Lemann, New Orleans, La. (closing).—There are a number of points I would like to lay stress on. In the first place, I think that it is improper to speak of a cure of diabetes. Allen does not speak of a cure of diabetes and has no intention of proposing his treatment as a cure. In the case of a man whose heart has been restored to compensation after having been decompensated, we do not think of the heart as being cured, but we think of it as being permanently damaged, and we try to keep the patient within the limits of the damaged heart. Allen would have us think of these patients with damaged pancreas in the same way and urges us to keep them within the limits of their damaged pancreas, so that we ought not to speak of cures, but of protecting the damaged pancreas from undue strain.

I want to say, too, that as far as the obese cases of diabetes are concerned, the new proposition of Allen is of as great importance as it is with regard to the thin cases of diabetes. It has been possible with the gradual reduction of car-

bohydrates and the interposition of fast days or green days, once a week or two weeks, to keep patients heretofore free of sugar. I have patients who have been kept free of sugar for a period of five or six years. The great value of the Allen treatment of such diabetics is the rapidity with which we make them free of sugar. It is not a matter of indifference, as Dr. Eustis suggested, whether patients are free of sugar or not. In the first place, if a man considers himself as doing better by being free of sugar, he is more willing to co-operate, and he is in a better frame of mind. As Dr. McLester has told you, psyche has a great deal to do with the diabetic. Besides, the patients undoubtedly feel better and do better when their urine is free from sugar.

I think Dr. Eustis is correct in laying stress on the importance of the proteid metabolism in diabetes and all modern writers upon the subject have called attention to that. Von Noorden and Allen have emphasized the fact. Even where the carbohydrate function is fairly reasonable, if we exhaust the ability of the pancreatic internal secretion to care for the sugar resulting from the splitting up of the proteid molecule, we run into trouble. The importance of ascertaining the blood-sugar of the patient has been dwelt on, and in that connection I would like to call attention to a very simple clinical instrument which ought to come into use, and which has been proposed by Dr. Epstein, of New York. It is a microchemical blood saccharimeter, which I have been using for some months since the appearance of his article in the Journal of the American Medical Association.

The case that has been put before us by the doctor from Dallas I would not care to analyze, because I do not think he is in possession of enough data to judge the case.

WEANING.*

By J. Ross Snyder, M.D.,
Birmingham, Ala.

Justification for the discussion before this section of a subject so trite as the above, is found in the common occurrence of cases of unnecessary and premature weaning, of difficult weaning and of rickets due to delayed weaning.

Cases of unnecessary weaning are rarely due to any cause other than ignorance on the part of the mother or on the part of the physician. In some sections of the country there exist mothers so selfish as to be unwilling to nurse. In the South this peculiar form of degeneracy is unknown; at least it is unknown in the personal experience of the writer, who has come in contact with a large number of mothers of various stations and of various colors. However, many mothers in this section, ignorant of the dangers of artificial feeding, permit themselves to be persuaded by meddlesome friends, or by thoughtless doctors, to wean their babies for trivial, insufficient and sometimes disassociated causes.

Contra-indications in the mother to nursing are exceedingly few. The tubercular mother should not be permitted to nurse. The mother who is a dope fiend is not fitted for the function. Insanity and epilepsy are contra-indications; the latter not invariably so. Women suffering serious chronic diseases, like advanced pellagra, should not nurse. Holt says: "Nursing should not be allowed where serious complications have been connected with parturition, such as severe hemorrhage, puerperal convulsions, nephritis or puerperal septicemia." This statement is altogether too broad, and coming from so high an authority, is all the more dangerous. No doubt many of you, as well as the writer, can recall case after case in which the mother having suffered one or more of these complications has yet been able to successfully and abundantly suckle her babe, without injury to herself. Holt is again unworthy of being followed when he advises that a third attempt should rarely be made by the mother who, on two previous occasions and under favorable circumstances has shown inability to nurse. Anyone who is willing to disregard previous failures and who will insist on a fair trial, will not infrequently be rewarded by pleasing results. One thing essential to success with the mother, who has previously failed in this function, is to get her in the right mental attitude. Reassurances by a tactful and resourceful physician will do much toward this end. First of all the physician must convince the mother that he can give compe-

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tent care to the infant, and that the latter will not be permitted to suffer during the mother's attempts at nursing. These mothers frequently thrive on the jollyings of the physician, but any deception practiced by him will be discovered with remarkable ease, in which event his usefulness in the case is at an end.

The mother whose nipples are inverted can hardly be expected to nurse satisfactorily. In this connection I want to assert that too many obstetricians allow their patients to go to parturition without an examination of the breasts. Under proper manipulation almost every inverted nipple is susceptible to sufficient correction to make nursing possible. The pediatrist, however, is often summoned to adjust artificial feeding for some baby who has been deprived of breast milk on account of the belated though frantic efforts of the obstetrician to correct this condition in the mother. Perhaps it is unfair to apply the name of obstetrician to physicians guilty of this oversight. Among "the grannies" of the profession, however, the sin is not an uncommon one.

Here, too, I wish to express the opinion that the use of alcohol and boric acid in the ante and post-partum care of nipples is not founded on good therapeusis. By dissolving and drying out the softening natural oils from the cells of the nipples, alcohol may reduce that organ to a condition even favorable to fissuring under traction and suction. Coit, of New Jersey, has repeatedly called attention to the irritating effect of boric acid, with especial reference to the use of this agent in mouth washes for infants. It is easily possible that the same irritation is suffered by the nipple which is constantly subjected to the influence of boric acid solutions. As substitutes for these agents I would suggest sterile cocoa-butter for use during manipulations calculated to promote elasticity and resistance, and the use of sterile soda solution for cleaning purposes.

These suggestions are made because of the recurring cases of babies who are weaned prematurely on account of painful and cracked nipples. Nipple shields in many instances prove unsatisfactory. Sometimes the baby refuses to take hold; in other cases the nipple refuses to heal even under the shield. An ounce of prevention here is worth pounds to the baby.

The healthy mother should take it for granted that she will be able to successfully nurse her baby. But because she has received an abundance of ill-considered and bad advice as to what she should drink, as to what she should eat, as to the significance of colic, as to the import of green stools, many a young mother labors under a too great sense of responsibility. Nervousness and anxiety are not conducive to successful lactation. It is rare indeed to see a negro mother, unless depleted with disease, who is not capable of furnishing a plenitful and good supply of breast milk. The reason for this is that the negress neither bothers nor worries about it. She may not realize the significance of the compliment, but the negro mother regards lactation as a physiologic, not a pathologic, function. The white mother, on the other hand, too often nurses her babe with fear and trembling. In this frame of mind she is too easily discouraged on the appearance of anything that she has been taught to interpret as a sign of trouble. On the physician's ability to give intelligent advice and wise counsel now depends whether the baby is to be tried on artificial food, or whether he is to continue among the breast-fed, where death occurs four or five times less often than among the artificially fed. Yet how lightly do some of our professional acquaintances assume this responsibility! One peculiar thing is, that the medical man who is least competent to supervise the artificial feeding, is frequently the one to most readily consent to, or even advise, weaning. Sometimes he does this without investigation of the modes of living and of the habits of mother and child. In these latter

are frequently found factors easily corrected, but perhaps the sole causes of trouble. One of the most common and nonsensical conditions existing among Southern mothers is a self-inflicted slavery during lactation, which permits insufficient outdoor exercise, insufficient sleep and insufficient diversion. Less commonly is found the petted and spoiled mother, who becomes too soft, too fat and too functionless. Women in either of these states are incapable of producing good breast milk. Many misconceptions and superstitions relating to lactation are revealed by painstaking investigation. I recently discovered a mother who was drinking not less than one-half gallon of tea per day, in an effort to stimulate the flow. I have known many mothers who, during the lactating period, were afraid to eat fruits; some who have denied themselves and their mates sexual intercourse; some who have become panic-stricken on the appearance of their menses; some who have become more panic-stricken at the non-appearance of the latter.

The correction of abnormal modes of living and the allaying of unnecessary fears in the mother will, in many instances, be all that is necessary to prevent premature weaning.

Babies themselves are frequently the victims of injudicious care. The three or four-hour intervals for nursing have proven more satisfactory for a larger percentage of babies than the old two-hour standard. It should not be taken for granted that digestive symptoms in the baby have invariably a digestive origin. The clothing may be improper. The baby may be getting an insufficient amount of fresh air; he may be the plaything of a thoughtless household that subjects his delicate nerves and body to all sorts of abuses and injuries. All of which should be ascertained and corrected before weaning is regarded as a necessary step. Again there are a number of mothers who secret milk of good quality, but insufficient in quantity to satisfy the baby's needs. It has been definitely and conclusively proven that the infant who gets some good breast milk along with the modified milk, fares considerably better than does the infant fed solely on modified milk. By weighings before and after nursings, it is easily determined how much breast milk the baby is actually receiving; complemental or supplemental feedings in cases in which deficiencies exist, leave no justification for absolute weaning.

Before closing this part of the discussion, I wish to call attention to the work of Frank C. Neff, who, with pleasing results, feeds certain cases of breast-fed infants displaying symptoms of indigestion, on skimmed breast milk. The nature of cases suitable for such feeding and the technic for obtaining the milk are discussed by him in an article read before the Section on Diseases of Children, A. M. A., 1914.

We now come to the second and briefer part of our discussion, namely: The proper time for and the proper method of weaning. In the writer's experience there are found, broadly speaking, two classes of mothers, one class which would wean too readily and too early, and another which would continue to nurse their babies indefinitely, even to the kindergarten age. The erroneous idea that breast milk will prevent colitis, and the unwillingness to become reimpregnated, have given rise to this latter class of mothers. In other sections of the country, where the mother's milk usually fails before the twelfth month, the dangers due to prolonged nursing need seldom be reckoned with. In the South, however, where many mothers are able to secrete milk for a much longer period, the problem is a real one and demands serious consideration. Here cases of rickets are becoming more and more common among children of white American parentage; these cases are almost always due to too prolonged nursing. Two things have been absolutely and defi-

nitely proven about breast milk: First, it is the ideal food for the baby for the first twelve months; second, the baby cannot thrive on breast milk alone for more than twelve months. No matter how much breast milk the year-old baby can obtain, this food does not contain sufficient salts, etc., to permit proper blood and tissue development. It is readily granted that a definite or fixed time for weaning cannot be set. If the proper methods are followed, however, there should be neifher precipitate nor difficult weaning. Some very good men insist on the baby, even from the first, receiving one bottle feeding per day. An early acquaintance by the baby with the nipple and bottle is undoubtedly the best way to prevent troublesome weaning later. Moreover, by permitting one bottle feeding, the mother is given a definite period for diversion and recreation, which undoubtedly will prove beneficial to lactation. Until the mother's milk has been well established, until the baby is thoroughly accustomed to the exertions necessary on his part to secure the milk by suction, until both mother and babe have been thoroughly rested, until an interval varying in time from two weeks to three or four months has intervened since the birth, the writer's practice is not to give a bottle feeding, but to have the bottle used for the administration of water. Before the baby reaches the third or fourth month the mother needs little recreation which the sensible three or four-hour intervals for nursing will not afford. On the other hand we know that the best and perhaps the only galactagogue worth considering is furnished by the stimulus brought to play on the glands of the breast during suction by the baby. When allowed too early one bottle feeding even might deprive the breast of adequate stimulation. Again there are babies who show such a marked preference for bottle feedings, although but one is allowed, that they resume nursing with disinclination and with a show of temper. This occurs more frequently during the first weeks, when the flow may respond only to very vigorous nursings. Later the baby may be able to get the breast milk with a little more exertion than would be required to secure the food from a bottle. If water has been early and continuously administered by the bottle method, no difficulty is experienced in getting the child to take milk feeding through the same device. If there is no indication of the mother's health failing, and if the breast milk continues ample, a second bottle need not be substituted for a nursing until the child is nine, ten, eleven or twelve months old, the time depending on season, and on the condition of the child in relation to teething, etc. Unless for good reason, such as traveling, inability to secure good milk at the time and place, acute illness in the child, etc., no baby should be allowed to go longer than twelve months without at least two bottle feedings. Weaning, in fact, should at this age be started, and completed in a period not exceeding several weeks.

Instead of which, we find a large number of babies taking an insufficient amount of proper food because of the very bad custom which allows them to tug on the mother's breasts throughout the night. These babies become anemic, flabby and show signs of rickets; the latter soon to become pronounced, unless the bad habit is stopped. With such babies, half-way measures are unsatisfactory; absolute weaning is necessary. The breast milk which they secure at night is insufficient in quality for their needs and only sufficient to rob them of appetite for proper day feeding.

Ill-health on the part of the mother, pregnancy, failure in the supply of milk, no matter what the indication for weaning, no matter how suddenly weaning must be done, the baby that has previously been given one or two bottle feedings per day rarely gives concern or suffers during the process.

On the other hand, the baby that knows but one way to secure food, namely, from the breast, will almost invariably cause himself,

the household and the doctor an amount of anxiety, trouble and distress out of all proportion to his size. The rebellion which he heads makes the Huerta or the Villa article look like a May festival in comparison. Before he is subdued and conquered he is usually bombarded with every kind of make and of taste of foods. Not succeeding in this, attempts to starve him out are made. These latter attempts usually result in a heartbroken mother, a dismayed doctor and an acidosis in a still unconquered baby.

After having encountered this lusty hero on several memorable occasions, we heartily subscribe to the doctrine that preparedness is an excellent measure for the maintenance of peace.

DISCUSSION.

Dr. L. R. De Buys, New Orleans, La.—This is another excellent paper that this section has had the privilege of hearing. I agree in the main with everything that Dr. Snyder has said. I think that we might make a division of weaning into normal and abnormal. Take, for instance, the normal child, what should be done with him? Accustoming the normal child to the nipple and bottle in the first few weeks of life will facilitate the weaning later on. An early bottle of milk for the recreation of the mother once a day might be begun after the sixth week of life, bearing in mind the instability of the milk during that time when the baby and the breast are adapting themselves the one to the other. Not later than the fifth month one bottle should be gotten in. I probably advocate complete weaning earlier than does Dr. Snyder. I believe the baby should be completely weaned by the end of the ninth month. My experience has shown me the milk at the end of lactation is as unstable as the milk is in the first part of the lactation.

Dr. Snyder has rightly said that prolonged lactation is sometimes a cause of rickets. We must bear in mind that weaning is frequently brought about by an insufficient supply of milk, many mothers believing that all they need to do for successful nursing is to put the baby to the breast. Now, breast milk is a food and food cannot be made from nothing. It is therefore necessary to get food into the mother for her, and extra supply for her baby, and the best food to make milk is cow's milk.

All abnormal conditions concerning weaning may be divided into two classes, those due to the mother and those due to the child. Chronic diseases, tuberculosis, nephritis, etc., are causes for the weaning of babies; also a delicate mother, and a mother who is losing weight. Any one of these conditions may be an indication for weaning. Again, severe acute illnesses such as typhoid fever and pneumonia, more particularly the complications of pregnancy, are indications for early weaning. The nervous conditions spoken of by the doctor are also indications for weaning and sudden weaning. An extremely nervous mother may suffer an attack of puerperal or lactational insanity. These are causes that undoubtedly should bring about weaning. There are some causes on part of the mother that can be corrected, namely, inflammation of the breast. If one breast is inflamed, if there is an abscess, that breast must not be used for the time being, but let the baby use the other. We have a means of emptying the diseased breast, and I have had occasion to use pups to keep the breast emptied as long as the process continued, and after the inflammatory condition had subsided the baby was put back to the breast. The abuse of the breast by irregularity can be overcome. When there is an insufficient quantity of milk, that condition can frequently be overcome by proper regulation of the mother's diet. A woman cannot be expected to nurse her baby at the breast during pregnancy and also take care of the child in utero. Menstruation is not an indication for the weaning of babies. During menstruation the child may have a slight upset that disappears as menstruation ceases. There are other conditions to be considered, but as I have used up all my time, I cannot mention them.

Dr. O. W. Ross, Leona, Texas.—I wish to take exception to the doctor's statement that pregnancy should not be considered a cause for weaning a baby. I have seen in more than one instance direful results brought about by the nursing of a baby as the woman became pregnant. In my experience, nearly always the baby suffers from gastroenteric complications, especially ileocolitis. I think the mother, after she becomes pregnant, needs all the calcium salts in her system to nourish and maintain the fetus in tero, and there is, therefore, a drain on the lacteal secretion, and it does not contain the proper amount of calcium and other salts that are required. My experience has been that a pregnant woman will have bad success in nursing her baby, and I would suggest to a woman who finds herself pregnant to wean her baby, no matter at what age, whether it be two months or ten months.

Dr. L. W. Elias, Asheville, North Carolina.—This is one of the most important papers that has been brought before the association. Of course, it is very important for the mother to nurse her baby at the breast unless there are contra-indications, such as pregnancy, lack of sufficient milk in the mother's breasts or the entire absence of it, etc.

Dr. Snyder is right in saying that we should not let the mother give up nursing her child at the breast because she has had an unhappy experience with her former baby. I recall a mother of five children. She was never able to nurse her babies for more than three weeks, but, with supplemental feedings, the last one she was able to nurse for nine months. While the others had a hard time, this baby got on splendidly.

Dr. Kerley, of New York, has given the results of observations on thousands of cases of nursing mothers, and of all these there was only one that had breast milk suited to the baby after the baby was a year of age. Although there is no hard and

fast rule as to when a baby should be weaned, we might use as a good basis the following: If we find a baby gaining steadily and satisfactorily on mother's milk, we can keep it up until we are approximately at the end of the first year. If at any time before that, say within six or eight months, we find the baby not doing well, not gaining in weight, but losing in spite of right measures, that in itself is an indication that it should be stopped.

Dr. J. Ross Snyder, Birmingham, Ala. (closing).—I wish to say to the gentleman on my left (Dr. Ross) that the advice he gives to mothers who become pregnant during lactation is very good. It is advice that Dr. De Buys and I insisted on. I am sorry that the acoustics of the hall are such that the gentleman could not hear what I said. Both Dr. De Buys and I made the point clear that pregnancy was an indication for weaning.

TRAINING BABIES.*

BY LEWIS W. ELIAS, M.D.
Asheville, N. C.

This is no small matter which I bring to your attention. A new-born baby is before you — a fresh life to mould and train—and if the best results are to be achieved, the family physician must, through the mother, direct the training of the baby.

If any one objects that mothers, not doctors, are the ones who should train babies, I agree with them. However, experience shows that the warm love of the mother is not sufficient guarantee that the child will be properly trained, any more than a deep sympathy for suffering is accepted by the public as sufficient qualification for practicing medicine. We all know, by the number of badly trained children of devoted parents, that something is lacking. Dr. Morse says: "Many a death certificate which has been signed with the name of some disease should have been signed 'improper training by the parents.'" And many intelligent mothers are feeling unequal to the task of training their children and are seeking help from books and doctors.

Therefore, along with all that shall be said regarding disease, it is most important that we should not omit this subject from our deliberations. I shall give the principles which appeal to me as most fundamental, and trust that this may elicit a discussion which shall clarify our views and leave us in possession of the best plan for daily use. Then, if we meet the demands of the times, we must, in our practice, conduct a sort of individual normal course for teaching mothers how to train their children.

Pardon an ancient illustration. The baby, like the clay, is pliable and yielding to any form of impress made upon it. Only a few years and this is no longer true; the clay is firmer. A few more years and both clay and child have hardened until it is now impossible to mark or mold them; we may only give a polish to whatever form they wear.

Therefore, "Train up a *baby* in the way he should go; and when he is old he will not depart from it"—we might almost say he can not, if he really has been trained. So, begin where life has not been marked, where nothing has to be erased, where your work will be deepest and most lasting—begin with, and train, the baby.

However, granting that the baby represents life at its most impressionable point: and further, that the mother, with her love and her constant association with the little pupil, must be its teacher, still, how can a baby be trained? It can not be lectured to; even the older babies can but vaguely understand our words. While this is true, we are not without resources. In fact, the most powerful means is at our disposal. All of us act chiefly from the habits that we have formed. With a baby this is even more true; for it has not judgment sufficient to choose the right, and is left almost wholly to the driving force of whatever habit has been formed. So, this is our method. Where the baby's small mind is incapable of determining its best mode of action, we substitute the directing and coercing influence of habit. For a baby's real training and progress comes from the habits it forms. And by the same token, we train a baby properly by developing in it correct habits.

Now, a habit in the baby is formed by a constant repetition of the same thing, in the same way, at the same time. The more absolutely exact we are in carrying out these details, the more perfect the resulting habit, and so the more powerful. Any varying of details results in confusion

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to the child, and in imperfectly formed habits, and so in an imperfectly trained child. Regularity, therefore, is imperative. For example: We wish the new baby to nurse every three hours. The baby knows nothing about our schedule and will be no wiser for an explanation. But, if we constantly put the baby to the breast every three hours—and then only—requiring it to wait until the hour, if it wakes and cries before; on the other hand, waking it at the time if it sleeps beyond the hour, we get results. In a very short time the baby, simply from the force of a growing habit, not of its own choosing, but forced upon it, yet none the less powerful for this, will begin more and more to wake of its own accord at the three-hour period, and sleep the intervening time. The habit has prevailed; and, I repeat, what was not chosen, but forced upon it, has now become second nature, and first choice. Now this method is in more or less use by you all. But I am insisting upon its use as a system.

Having established a regular habit of nursing, we have put the baby in the best way to keep in good health. For if regular meals are essential to good adult digestion, how much more necessary to the immature organs of the infant! And when we remember that the mother's milk varies in richness with the intervals between nursing—the more frequent the nursing the more concentrated the milk, and vice versa—we at once realize that in order to secure a mother's milk of uniform strength it is necessary to employ uniform nursing intervals. Ninety per cent of the troubles with a baby in the first year of life are digestive. We can not expect the best digestion in a baby fed at irregular hours on milk of irregular strength.

But this is not all. The habit of regularity has in it the seeds of much of the child's future happiness, if we but follow along the natural course of development. Bound up in the habit of regularity are far-reaching influences. One of these even strongly affecting the character; and this, too, in a way which probably nothing else does in all its training—it teaches self-control. When the baby has fussed and cried a few times for its food, without getting it, and without receiving attention of any sort, gradually it stops wasting time in that way and turns its activities into other and more profitable channels. Unconsciously it is learning that there are things not to be obtained by any amount of worrying, and so it comes to take undesirable situations gracefully. This tiny baby is actually acquiring self-control. The little human engine is developing a mental governor which will prevent its racing and racking itself to pieces, as we frequently see badly trained children do when things go awry.

Once the baby has learned self-control, he is able to obey, and not before. All thoughtful physicians will readily agree that the chief duty of a parent is to train his child in obedience and self-control. If he fails in this, he has robbed the child of its birthright and it has missed that which best enables it to meet life squarely and live it most fully and joyfully.

A few words regarding obedience. When the baby understands our pleasure and displeasure, and we easily convey to him by words or signs our simple desires, he is then old enough to be taught to obey. Here, again, the baby's deep ignorance might be considered a serious obstacle. He knows neither the object nor the desirability of obedience. But the child learns to balance himself and walk before he knows the physics of the process. Therefore, don't teach the child obedience—teach it to obey!

Once you have indicated your desires to the baby, see that he complies. If necessary, let all the rest of the business of life remain standing until the order is obeyed. The means used to secure the end are of minor importance — the obedience is paramount. The next time you make a request of the baby employ exactly the same method. Demand obedience every time and the baby, without understanding the object of it all, will take on the habit of obedience, first because it knows no other way of dealing with the situation, but chiefly because it is a habit, and the habit of obedience at this time of life is as irresistible as any other, if perfectly formed. Probably the key to the habit of obedience is *consistency*.

The subject of punishment comes up naturally at this point. It scarcely deserves all the discussion which it has received. There is no sovereign form. Chil-

dren are not all alike, and even the same child requires different treatment under varying conditions. A man who says that corporal punishment should be tabooed is probably as unwise as the one who employs it universally. Our object is the habit of obedience with only one condition—it must not be at the expense of the baby's respect, for this reason: The baby obeys at first because he must and from habit, but later will enter in the element of respect, and if this has been omitted we can not carry forward the process of obedience. And it is not necessary that we be infallible, only that we be fair, and the child will understand and be satisfied. Of course anger or a vengeful spirit would not only lose this respect, but present a poor spectacle before the baby to whom we are teaching self-control. To condense all of this: Without anger consider the child and the circumstances; then faithfully apply whatever punishment seems right, and only good will come of it.

A few more points may be briefly considered in training the baby. One of the first, in point of time, to come up, is training the baby in regard to crying. The baby has but one word in its vocabulary—a cry. This word has many inflections, few of which are understood. The mother is too apt to interpret them in the light of her own use of the term. And so a cry in a child means to the average mother either anguish, mental or physical, or hunger. To a large extent two measures are employed to meet these supposed conditions. Either the infant is walked, bounced, rocked and coddled or else it is fed, or both. These methods seldom meet the conditions. In the first place babies rarely do very active crying from hunger. Nine times out of ten the crying, if pronounced, is from too much food or some other form of discomfort. Now, if the baby is seriously uncomfortable or sick, it needs treatment directed to that particular trouble. Walking and jiggling must be regarded as very crude therapy at best. If the child is merely spoiled, having learned that crying kept up long enough will be effective, then it is extremely unwise to encourage the habit. Intelligent observation, together with constant, watchful neglect, will substitute a habit of cheerful independence in entertaining itself in place of the nervous, peevish dependence upon outside help for amusement. So we can safely say that walking and all such measures are never to be employed in the proper training of the baby.

As to the baby's food when he begins to enlarge on his milk dietary. Simply this: He should form the habit of eating all wholesome articles. Most dislikes for foods are prejudices, either suggested or allowed to develop. Therefore, discourage this tendency by requiring him to eat some of all foods suited to his age until the habit of eating them has become either a fondness for them or at least an easy tolerance of them.

Again, no child should be allowed to pout, to quarrel, or to indulge a sullen spirit. If this is forbidden we leave the soil entirely free for the cultivation of cheerfulness. And this positive virtue must be invoked as an outlet for the baby's active spirits, if for nothing else. Babies are happy little mortals and they find much joy in trying to please. Reward them with encouragement and praise, and we develop the habit of thinking of others. Of all habits this is the most graceful and only needs direction and sympathetic encouragement.

The baby should be encouraged to take his little bumps and other distresses lightly. Self-pity unmans all of us. It interrupts the progress of an otherwise cheerful spirit and must not be permitted. So the parent must be judicious in extending sympathy to the child. For while sympathy is most valuable when properly used, when carelessly handled by thoughtless people it is really more dangerous than dynamite, and of most of us a license should be required before we are allowed to use it. This would entirely eliminate that false sympathy which "just can't stand to hear the baby cry," and kindred brands which work such havoc with proper habits in the baby.

The points in training might be multiplied indefinitely. However, this paper is to emphasize fundamental principles, from which may naturally come a simple and orderly development of the little life along right lines. These suggestions are not new—we all employ them; the difference in results comes from the systematic use we make of them. If any one doubts that

there is a world of difference between the regular and irregular use of these simple measures, let him go home and select the worst case of his practice—probably his own baby—for doctors' babies, in my experience, are the worst trained of all, considering the better knowledge for their training. Let him, for instance, persuade the mother to put this worst case in a sleeping bag at night and leave the baby absolutely alone to cry it out a few times. The results will encourage both doctor and mother to further pursue the method above outlined.

In conclusion, the points which I wish to emphasize are these: The importance of early training, the controlling force of habits created by regularity, remembering the birthright of self-control and obedience. And if I should put in one word the foundation upon which all the rest of life could best be built, let it be this—REGULARITY.

DISCUSSION.

Dr. J. Ross Snyder, Birmingham, Ala.—I think of all the people present who ought to be most intensely interested in Dr. Elias' paper, it is the neurologists. They ought to lend a hearty endorsement to it. Insanity, degeneracy, is increasing at an appalling rate. I believe it has been estimated that within a few years there will not be enough normal people left to take care of all the people in the asylums and institutions of various kinds. Dr. Elias' paper points out a way in which a great deal of this can be prevented, provided the baby is started right.

Another point I wish to emphasize is that we have in various sections of the country, and now beginning in the South, a revolt on the part of women against motherhood. It occurs to me if we make motherhood more pleasant, more easy, more wholesome, we will check this revolt. Dr. Elias again points out another way in which this can be done.

Dr. L. R. DeBuys, New Orleans, La.—I want to thank the doctor for the subject he has brought before this Association and for the thoroughness with which he has handled it. There is nothing to be added, but some few points should be emphasized. A particular point to be emphasized is that it is very easy to allow a baby to make habits, particularly bad habits, and it is extremely hard to correct these habits. After once correcting a child of a habit, or rather before deciding to correct the child of any habit, it should be determined that if there is any future occurrence of the same habit it should always be corrected.

Another point is that by training a child early in life all of the acute illnesses in childhood are more easily handled. Their duration is frequently shortened and their convalescence also.

Just one more point: A statement made by Dr. Snyder brought this to my mind, that the more thorough we are in the training and regulating of habits of babies, the less nervousness we are going to find not only in infancy, but in early childhood and probably in later life.

Dr. M. L. Graves, Galveston, Texas.—The doctor's excellent paper gave us much food for thought, as well as discussion, but I am impressed with the fact that merely an effort to train children does not go back far enough. If you are going to train out the nervousness, the restlessness, the indigestion, the nervous dyspepsia of children, you must begin back at least one generation, and preferably two or three generations, and furnish them with good protoplasm. You can not take a drunken father, saturated with alcoholic poisons and other toxins, and the mother, "the maid of all work," as Dr. Oliver Wendell Holmes said, saturated with fatigue toxins, intestinals autointoxication, and make a protoplasm that will not develop imbeciles, idiots, degenerate and insane individuals.

The habit of the English nurse taking a child from the time it is able to sit alone and placing it in a chair alone, requiring it to sit there quietly for ten minutes during each twenty-four hours, is a method of discipline that is good for body and for mind; but, the most important effort ought to be to always provide these children with an hereditary protoplasm that will make these good habits available in raising the right kind of citizens.

MORPHINISM AND KIDNEY DISEASE

By John W. Stevens, M.D.
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At this time, under the influence of the Harrison act, a great many opium habitues are finding it necessary to seek treatment for relief from that habit. The federal government having provided no means for their treatment, the facilities afforded by the state and county being limited, and the cost of treatment in private institutions being prohibitive to many, a great many of these patients appeal to the family physician for treatment. This being true, I think it is not amiss to call attention to what, in my experience, has been the principal danger attendant upon the withdrawal of opium, or any of its derivatives, from its habitues, viz., uraemia, which is the only serious complication I fear. At this point I will say parenthetically, as it were, that since one hundred and thirty-five of the cases to be discussed used morphine, two gum opium, one paregoric and one laudanum, and that none of the four last mentioned showed

kidney symptoms, I will from this point forth use only the term morphinism.

To attempt to discuss the association of morphinism and nephritis in all of its relations and details would take up more time than the present occasion allows, and demand a different sort of study of these cases than I have made. It has been my observation that, upon the withdrawal of morphine from one who has been addicted to its habitual use, disturbances of kidney function are not at all an uncommon occurrence, the symptoms manifested running all the way from the presence of casts in the urine to death from uraemic coma. In the last one hundred and thirty-nine cases that I have treated for addiction to morphine, I have found albumin in the urine of twenty-eight. Two others without albuminuria showed urinary casts in considerable numbers, a total of 21.5% presenting urinary evidence of kidney disorder.

Strangely enough, however, I have been unable to find anywhere in the literature any reference, save one, to this subject. A few years ago I chanced upon an article, written some time between 1840 and 1850, in which the author called attention to the association of kidney disease and morphinism, but I have forgotten both the name of the writer and the journal. Much is said about the danger of collapse from heart failure, but in my experience I have met only one case in which such symptoms were in any wise alarming. The serious diarrhea reported by some as arising under similar circumstances, I have not met. Again, I say, the only serious complication I have ever seen in the treatment of these cases is toxaemia from impaired kidney function, and that is a danger that the man in charge of such cases should ever bear in mind and be on guard against.

That the habitual use of opium, or its derivaties, has a deleterious effect upon the kidneys seems to me conclusively proven by my experience. That in thirty of the one hundred and thirty-nine cases treated albuminuria or casts were found is an occurrence entirely too frequent to be mere co-incidence. Of these one hundred and thirty-nine cases under consideration, nine had albuminuria and two had urinary casts at the time of admission to the hospital, and nineteen developed albuminuria during the treatment before or shortly after the withdrawal of the drug. Of these, in two instances, the kidney symptoms were sufficiently prominent and active to produce considerable diminution of urinary output with nausea, vomiting and headache; while eight others advanced to the degree of uraemic coma, of whom three died. Of these cases, ten in number, who developed recognizable symptoms of toxicity, in none had casts or albuminuria been discovered previous to beginning the treatment for withdrawal of the morphine. This may be due in part to chance and in part to the greater care exercised in those cases in which albumin had been previously discovered, for there is no logical reason why a case presenting albuminuria before treatment should be any less likely to develop serious trouble upon the withdrawal of the drug. But this brings me to the point which I wish to emphasize most strongly, and which is the principal reason for presenting this subject, viz: that a case quite without active symptoms of kidney disease may, under the shock incident to the withdrawal of morphine, develop disturbance of kidney function to the extent of uraemia and death. I am inclined to believe that the occurrence of any of these symptoms of disturbed kidney function constitutes prima facie evidence of a pre-existent kidney disease which, if we are to continue the use of the term, most often means a chronic interstitial nephritis, and that the shock and disturbed metabolism and nervous equilibrium incident to the suppression of the accustomed drug simply precipitate the occurrence of the symptoms in question, just as a bodily injury sometimes will do in a chronic nephritic. However, I think there are a lot of things unknown about the effect upon the kidneys of biological processes going on in the organism, as well as ignorance as to just what changes have taken place in the body, as a result of which it is possible for the organism to acquire a tolerance for large quantities of a poisonous substance like morphine which, in a much smaller amount previous to that acquired tolerance, would have been fatal. What is it that happens, what substance, if any, develops which permits the person, after

a lapse of time, to acquire the ability to with impunity take 30 grains of morphine at a dose, one-fifth of which amount, previous to this acquired tolerance, would have been fatal; and may it be that the cessation of the use of morphine releases in the organism some substance which was formerly kept bound, or in some wise antidoted by the morphine which now becomes a poisonous substance with deleterious effect upon the kidney cells, and thus the albuminuria and toxic symptoms be merely evidence of acute kidney irritation, and not of a previously acquired chronic nephritis? In this I am merely speculating and not putting this forth as a theory which I will attempt to defend. I will say, though, that with the exception of those cases of uraemia which died, in the other patients who first showed albuminuria upon withdrawal of the morphine, all discoverable manifestations of kidney disorder disappeared in a very short time, and the patients were apparently restored to health.

Aside from these theories as to the causation of the acute symptoms of disturbed kidney function, I do feel justified in saying that it is my positive belief that the habitual use of morphine does tend to produce kidney disease of those forms manifested by casts and albumin in the urine, and that, regardless of how it brings it about, I know that, upon the withdrawal of the drug from these habitues, there is danger that the function of the kidneys may become so impaired and perverted as to bring about states of toxaemia and even death, and that in the treatment of these patients this fact is ever to be borne in mind and our efforts constantly directed toward the prevention or control of these symptoms, if they arise.

I do not conceive that any of the methods of treatment given, drugs administered, or other methods of handling the cases, could in themselves have had any effect upon previously healthy kidneys to produce any disturbance of their functions. These methods of treatment followed have been three in number, two of which are not very materially different from each other. The first is one founded upon the general principles involved in the widely used Townes or Lambert treatment which I have modified in this wise: Having as a preliminary measure first reduced the daily consumption of the drug to the minimum amount upon which the patient could be kept comfortable, the patient is then put upon what is known as the active treatment, which, without going into all the minutest details, may be described as follows: The treatment is begun at 8 p. m., at which time the patient is given his accustomed dose of morphine, or other form of opiate, together with a dose of calomel and podophyllin with one-thirtieth grain of strychnine. This is followed the next morning by a dose of salts and an amount of morphine equivalent to half his accustomed daily amount, given in three divided doses at half-hour intervals, beginning at 7 a. m. At 10 a. m. the administration of spartein sulphate in two-grain doses, given hypodermically every three hours, is commenced, and at noon hyoscine, in doses of one one-hundredth grain every three hours, begun, both the spartein and hyoscine being given at these intervals for thirty-nine hours, the spartein being continued in the same dosage or in diminished amount for two or three days after the hyoscine has been stopped. During the course of this administration of spartein and hyoscine, there are given at the thirtieth hour from beginning of treatment, three compound cascara pills; at the thirty-fourth hour four vegetable cathartic pills; at the fifty-fifth hour four compound cathartic pills; and at the sixty-first hour one ounce of castor oil. The amount of purgative given is, of course, governed by the effect produced, the principle involved being to secure and maintain throughout treatment very free elimination, though not violent purgation. Likewise, in the very beginning of the treatment, and throughout, the patient is required to drink a glass of water every hour when not asleep, and customarily I expect to give enough sodium bicarbonate during this time to keep the urine alkaline.

The second method is the time-honored one of gradual reduction, the diminution of the quantity of the drug administered during the first few days of treatment being much more rapid than subsequently. The drug is entirely withdrawn in from ten to fifteen days. During this time so-

dium bromide, in doses of thirty grains three times a day, or trional or sulfonal, in twenty grain doses at bedtime, or veronal, in eight or ten grain doses at bedtime, are given to induce quiet and sleep. All during this period of ten or fifteen days which the treatment lasts, the patient is required to drink a glass of water at hourly intervals when awake, the bowels are kept open freely, and sodium bicarbonate is given.

The third method differs in no wise from the second, except that instead of giving as a sedative sodium bromide alone I have added to this fluid extract of ergot in ten to twenty minim doses every three or four hours during the last three or four days prior to entire suppression of the opiate. In both of these latter described methods of treatment, I customarily give spartein in doses of two grains every three or four hours during the last three days preceding entire withdrawal of the drug and for a few days thereafter.

Of the nineteen cases in which albuminuria or casts appeared after the beginning of treatment, ten were treated by the hyoscine method, eight by the second method described and one by the last. Of the total number of one hundred and thirty-nine cases, seventy-seven were treated by the hyoscine method, fifty-eight by the gradual reduction, without ergot, and four by gradual reduction with ergot. From this, then, it would appear that, assuming other things to be equal, neither of these methods of treatment is any more prone than another to call into existence toxic kidney symptoms. It is perhaps not entirely true to say that my figures demonstrate that these kidney symptoms are not less prone to follow the more radical hyoscine treatment than the other methods, for, as a matter of fact, the form of treatment selected has usually been determined by my apprehension of the occurrence of these symptoms, and, believing their cause to be shock, it has been my custom to apply the gradual reduction method almost exclusively in those cases who have used the drug for a long time in large amount, or who are past fifty years of age. Though of the patients treated by the use of sodium bromide and ergot one in four developed albuminuria (one of the fatal cases, by the way), the total number so treated is too small to base any conclusions upon.

If toxic or uraemic symptoms do arise, they are to be combated here as in any other case, and with regard to the details of this treatment I will speak for a moment only of the use of morphine. If in the course of the treatment of a case of morphinism there suddenly appears albumin in the urine in considerable amount, but without alarming diminution of the urinary output, or evidence of beginning coma, I would advocate the resumption of the minimum amount of morphine with which the patient may be kept comfortable. If such symptoms arise after the patient has been twenty-four or forty-eight hours entirely without morphine, I would be very hesitant about giving him any with the hope of combating the symptoms in question, for, if the patient has been more than twenty-four hours entirely without morphine, it has not been my experience that the resumption of the drug will cause the albuminuria to disappear or the urinary output to increase. Upon the appearance of coma, whether the entire withdrawal of the opiate had been previously accomplished or not, I would certainly withhold morphine, since, under those conditions, the drug would have the same deleterious effect of tending to lock up the secretions and further obtund the patient as in any other case of uraemia.

AUTOTHERAPY.

By John C. Parham, M.D.
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In 1912 Duncan, of New York, described the use of pathological products containing the etiologic and complicating factors of disease and cited prior articles from his pen dealing with the same subject. His article made a special appeal to me, situated as I was, and treating a class of cases especially adapted to the exhibition of autotherapy.

Autotherapeutic agents are administered by the mouth and hypodermically. When the latter method is followed a filtrate is employed and is termed an auto-

genous filtrate, and it is this method that I have employed with few exceptions, as it appears more efficient and exact.

Broadly stated, infectious diseases at least are terminated successfully when the organism reacts and produces a sufficiency of opsonins, agglutinins, precipitins, or whatever we may call them, to neutralize the causative agent of the disease. The same principle applies in the production of immunity by vaccination, for instance, against smallpox or the administration of typhoid prophylactic against typhoid fever; here we artificially endow the body tissues, or rather cause them to be endowed, with antibodies which effectually neutralize their specific antecedents when introduced into the economy.

Autotherapy uses the end products of disease processes, the toxins, to form antibodies with which to neutralize the organism or organisms responsible for the pathologic condition; it means the production of active immunity. It is by no means clear to me why the toxins of disease already subjected to absorption by the body tissues originating them should require removal and readministration hypodermically or per orem to produce antibodies as rapidly as we require for therapeutic uses unless it is that they can not excite antibody production in tissues whose vitality is lowered as they can in healthy tissue; such appears to be the case, or the question of over-dosage may play a part. Duncan gives as a general rule:

"When the pathological exudate or the end product (or a dilution of the same), of any localized, loosely localized, and possibly non-localized infectious disease is filtered with a Berkfeld filter and the filtrate injected hypodermically, or placed in healthy tissues, antibodies specifically corresponding to the disease will tend to be developed.

"A corallary of this general rule is: In extra-alimentary and extra-pulmonary diseases, if the crude pathological end products are placed in the mouth specific resistance to the disease will tend to be developed."

Now it is indeed rare that any one organism is responsible for the entire symptom complex of a disease. To cite an every-day example, let us mention the mixed infection of the surgeon or the many complications of gonorrhoea with often in the latter stages an entire absence of the gonococcus, the complicating organisms having dominated the field. Realizing this fact, laboratory workers in the preparation of vaccines have sought to render them more effective by including many of the complicating organisms and producing the so-called mixed vaccines. Right here it may be well to state parenthetically that the underlying belief upon which autotherapy is based, according to Duncan, is that the unmodified substance that causes the symptoms of a disease—*note that I say symptoms*—can often be utilized to cure the disease. The toxic element developed during the course of a disease is the substance that causes the symptoms of the disease, and that if these combined toxins are placed in healthy tissue, the tissues will react to them and that this reaction is the specific reaction of the disease, i. e., specific antibodies are formed. The pus from a specific wound represents and contains the toxic end products of the disease. Moreover, it contains the toxic end products caused by every organism complicating the infection. Therefore, to develop antibodies, according to the theory set forth, which are absolutely specific, we administer a filtrate of the end product, usually wound secretion or pus.

It may be reasoned that the natural curative reaction of the disease is the reaction against the exact toxins developed in that individual patient, or the reaction against the toxic complex. Upon this assumption it appears that we can never tell whom a stock vaccine will benefit—for if the patient from whom the stock was taken did not present the same symptoms as our patient, the reaction, i. e., antibody produced, will not be exact and specific, and thus of only partial, if any, benefit. For instance, given a case of mixed infection. We may have any combination of from two to twenty organisms present, with each exerting a pernicious influence and producing separate and combined symptoms and pathologic changes. To administer an autogenous vaccine requires time and we are not certain that the correct organism is isolated; if we use a mixed autogenous vaccine we can not be certain of including all of the complicating organisms, and unless that is done

the result can not be ideal, for certain antibodies will not be formed except by the slower natural process.

As opposed to uncertainty in this respect the autogenous filtrate presents advantages. Here the discharge from the infection containing every toxin from causative and complicating organisms is mechanically separated from micro-organisms, mucus and extraneous matter, and there remains in the filtrate the toxins which are the therapeutic agent.

The wound discharge, pus, sputum or urine containing the responsible organisms to the amount of a few minims or cubic centimeters, depending upon the amount available, is added to 50cc. of sterile water in a sterile container, which is closed and then set aside for from 12 to 24 hours in an incubator at about 99° F. A warm room serves the purpose as well; in the summer incubation is not required where the temperature is around 90° F. Exactitude, while desirable, is not absolutely requisite.

The container should be vigorously agitated four or five times during the period of waiting. Upon the completion of the incubation period the contents of the container are passed through a Berkfeld filter of sufficient fineness to prevent the passage of organisms and the resulting filtrate constitutes the finished product. I have had no difficulty in procuring a filter such as described by Duncan from any of the larger surgical supply houses. The type employed costs about three dollars and consists of two parts, a mantel and a candle or cylinder. A rubber stopper with one perforation, a right-angled piece of glass tubing and a hand atomizer bulb, the whole constituting a simple apparatus for increasing the pressure in the mantel, serves to expedite the filtration process.

The usual surgical technique, sterilization of apparatus and reception of filtrate in a sterile container, is observed.

It is stated that a filtrate becomes decidedly toxic when kept for a much longer time than twenty-four hours, the degree of toxicity being in direct ratio to the length of time. Upon this I base one indication for dosage; a smaller dose is administered when the mixture is incubated for twenty-four hours than that used when the incubation period has been twelve or eighteen hours.

The dose also depends on the amount of discharge or pus used in making the filtrate and the condition of the patient; thus every dose is a law unto itself. I have used it within the limits of from five to thirty minims. It is administered as an ordinary hypodermic. The systemic reaction is silght; rarely does the temperature exceed 100° F., and the local reaction is almost nil.

The condition of the patient determines when the next dose is given; so long as improvement is manifested do not repeat. There is no danger of an anaphylactic reaction since no foreign proteid is introduced. I have never seen any ill effects attributable to an autogenous filtrate.

There are some types of infection in which autogenous filtrates act almost magically, among these those of the skin being pre-eminent.

I regret that case histories accumulated for the past two years of my autotherapeutically-treated patients were lost during shipment across the continent last summer, but I may rely upon memory for a synopsis. Under these circumstances observations can not be other than general and must lack many details.

CARBUNCLE.

My case records showed four cases. In three of these cases the infection was seen early, but after the multiple foci showed pus. Two of them were on the upper lip and adjacent cheek and were not opened as extensively as they would have been otherwise, neither were they cauterized. The pus from these infections was added to 50cc. of sterile distilled water and allowed to stand with occasional agitation for 24 hours. After passage through a Berkfeld filter 2cc. of the filtrate was administered per hypodermic. Resolution set in, and the day after injection the appearance of the lesion was such as to cause me to doubt the accuracy of my diagnosis. In neither case was a second injection necessary. The third and fourth cases were seen after full development and were incised and treated as were the first cases. The well known very high mortality of carbuncle of the upper lip needs no comment. I feel that I should state that previous experience in similar

infections treated by autogenous filtrates, exclusively justified my actions in not incising and extensively cauterizing these lesions.

An unusually rich clinic in skin lesions has led me to rely upon autogenous filtrates in the treatment of furunculosis. The obstinacy of these cases is common knowledge. The method employed is incision, collection of a small amount of pus from each lesion and, after adding water, proceed as detailed previously. Marked lessening of pain and discomfort, together with rapid resolution and regeneration of the affected areas, is noted within 12 to 18 hours. Usually two or three injections are necessary in treating a severe case, but rarely does a good-sized furuncle appear after the first filtrate is administered.

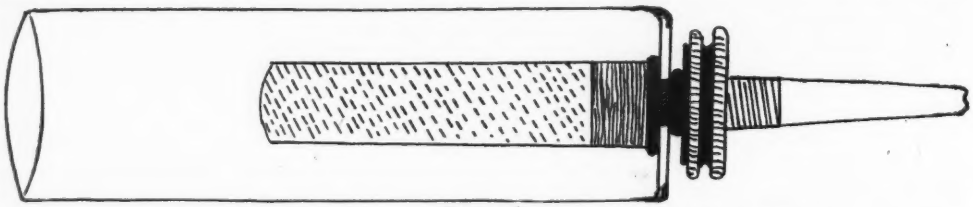

Figure 1.
Type of Berkfeld filter used in preparation of autogenous filtrates. (Correct position of illustration will be observed if the Journal is turned around. The cut properly inserted would show the small end pointing downward.)

Similarly cellulitis, lymphadenitis and like infections are treated by autogenous filtrates. Where no pus is available, as in the case of cellulitis before resolution or pus formation, my method has been to make free incisions and pack with sterile gauze. The dressing is kept wet with Wright's solution and at the end of 24 hours removed and the stained portion of the gauze clipped off and sterile water added. With this the filtrate is made. It is a disappointment to record that tendo synovitis as yet is not benefited by autotherapy. In fact, in the deep infection of the hands and feet generally I have failed to see good resulting after the use of autogenous filtrates at all comparable to the benefit derived in other infections.

In the obstetrical field puerperal sepsis is treated both prophylactically and curatively. The filtrate is made by clipping off a portion of the stained napkin and utilizing the discharge thereon to make the filtrate. A review of the literature on the treatment of puerperal sepsis will show how helpless we are in contending with this condition. Filtrates have proven of marked value in my hands in treating puerperal sepsis and I believe are well worthy of the confidence placed in them in this condition.

No matter what the causative organisms, the principle underlying the treatment and the treatment are the same. While it is desirable to know the organisms responsible for scientific reasons, the knowledge helps the direction of the treatment not one iota, and can be as efficiently carried out away from the laboratory and laboratory aids as it can be in the presence of these adjuncts, and thus is within the reach of the country practitioner as well as that of his confrere in the city.

At the risk of being accused of talking shop, I want to prophesy a marked reduction in infected wounds in military surgery when autotherapy is practiced pro-

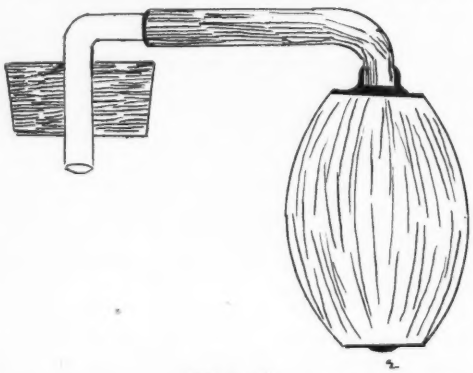

Figure 2.
Hand Atomizer Bulb, Rubber Stopper and Glass Tubing.

phylactically. I make it a rule to administer a filtrate in all extensive septic wound cases. The material for the filtrate is obtained from the wound before the application of the usual tincture of iodine and consists of particles of foreign matter contaminating the wound and expressed blood. In other cases the filtrate is made from a portion of the stained dressing impregnated with wound discharge taken at the time of the second dressing.

Similarly in intra-abdominal and intrathoracic conditions where pus is located, the patient receives twelve hours after operation a filtrate made from the pus; in otitis media a filtrate from the discharge, aural or naso-pharyngeal, would be of signal value in preventing mastoid complications.

It will be seen that in surgical as well as medical fields the range of application of autotherapy is wide and what is to the point it is effective. It is obvious that the secretion of a wound upon which an antiseptic or germicide such as bichloride, phenol, etc., had been used, would be unsuitable. However, I believe that the day of these agents so generally employed in surgical practice is on the wane, and that the almost universal use of salt solution, salt solution and sodium citrate or Wright's solution will supplant them. These solutions not being antiseptics or germicides in the literal meaning of the word, are not contraindicated where the employment of autotherapy is anticipated.

It is claimed that in extra-pulmonary and extra-alimentary conditions the wound discharges are just as efficient administered by mouth. For instance a prescription would be

Pus	Drachms 1
Aquae	Ounces 1

M. Solution.
Sig. Drachms one every four hours by mouth.

This being the case, the administration of the agent is still further simplified. I have not employed the method, therefore can not do more than to mention it.

So far as I have been able to ascertain, the entire credit for this method of treatment must be given to Duncan. The principles enunciated in this article are his almost without exception, and the sole purpose of this article is to attempt to direct attention to the procedure in order that it may gain the wider employment its merit deserves.

There are many points in connection with autotherapy which require study and elucidation. Among these the question of determination of dosage is important. So far only generalities can be indulged in in discussing dosage. The lack of toxicity in the recently prepared filtrate robs experimentation of apprehension and greatly facilitates its employment.

In closing I must state that it is not intended that in treating conditions amenable to autotherapy that other measures be neglected; neither is autotherapy advanced as a cureall; it is of absolute value in some conditions, a few of which have been cursorily mentioned, while others will immediately suggest themselves; for instance, bronchial and pulmonary affections, gonorrhoea with its complications, bacillary dysentery, and the arthritides, where an infection can be charged with the lesion.

Reference: N. Y. Medical Journal, Dec. 14 and 21, 1912.

AUTHOR'S ABSTRACTS.

Medicine.

Tabes Dorsalis Simulating Acute Abdominal Disease. By J. Morrison Hutcheson, Richmond, Va. The Old Dominion Journal of Medicine and Surgery, April, 1915, pp. 195-201.

Visceral crises often occur as the first symptom of tabes. The crisis known as gastric may closely resemble any one of a number of acute abdominal conditions and is difficult of recognition if attention is too closely confined to the abdomen.

Six cases of tabes are presented illustrating how crisis may be mistaken for appendicitis, peptic ulcer, gallbladder or renal colic, or intestinal obstruction.

The diagnosis of tabetic crisis can only be arrived at by a careful consideration of the case history together with a thorough physical examination, including a painstaking investigation of the reflexes. Laboratory tests confirm but do not disprove.

TROPICAL DISEASES AND PUBLIC HEALTH

THE CONSERVATION OF HEALTH.*

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In about the year 1889 Louis Pasteur, the great French chemist, explained fermentation by showing that the various changes involved in the process were the result of the presence and growth of a micro-organism which he called the ferment. He therefore at that time fathered and founded the science of bacteriology and proceeded to demonstrate that the varieties of fermentation were due each to a special organism, and that when these atmospheric germs were absolutely excluded no change took place. These discoveries proved of great service to the industries of brewing and wine making, in which scientific certainty was substituted for guesswork. By these demonstrations he changed the entire conception of the theory of disease in the civilized world.

The discovery of vaccination for the prevention of smallpox by Jenner had not been utilized until Pasteur generalized it by determining that each variety of fermentation has its origin in a specific ferment. Thus, in various maladies, the infection depends upon the presence of a specific microbe. Pasteur found that artificial growths, or "cultures" of this microbe, might be obtained, and that by a certain succession of such cultures the virus or poison of the microbe became so weakened or attenuated that when animals were treated with such microbes the animals became immune, notwithstanding the fact that they suffered a slight attack of the given malady. Of great importance was the application of this discovery to the treatment of cholera in fowls, and to anthrax in cattle and sheep. He finally extended it to the inoculation for rabies with beneficial effect.

It therefore might be said in all truthfulness that Pasteur is the father of the theory of the conservation of human life. In this theory of disease from micro-organism he was ably assisted by his apt student, Robert Koch, who discovered in 1882 the tubercle bacillus. In 1884 he discovered the cholera spirillum. In 1885 he was appointed director of the Prussian Board of Health and thereupon began that wonderful system of the conservation of human life in the Prussian empire which has resulted in the production of one of the most wonderfully vigorous nations of men that the world has ever known. In 1890 he stated that he had discovered tuberculin, a substance that cured tuberculosis, but in this he was doomed to disappointment. This dread disease, let it be hoped, will be cured by some of his followers, and so cancer may be no longer feared as a scourge among the peoples of the earth.

A few years ago the threatened exhaustion of certain of our country's natural resources, due to ignorance and wanton extravagance, provoked an outcry that became national in its scope and intensity. The machinery of government, both federal and state, was utilized to avoid disaster by conserving as nearly as possible what remained of our natural wealth. We are still engaged at this time in a resolute effort to avert the consequences that would follow the loss of various forms of energy necessary for the maintenance of our business industries.

Incredible as it may seem, in this work of conservation most of the people were imbued almost solely with the idea that the only danger was in loss of forests and water power, coal deposits, and in lack of proper cultivation of the soil. They were oblivious of the fact that a tremendously greater and more vital loss—a human loss—was at stake. The movement in behalf of the conservation of human

*Read in Section on Public Health, Southern Medical Association, Ninth Annual Meeting, Dallas, Texas, Nov. 8-11, 1915.

life in the United States is comparatively of recent beginning.

The public was deeply impressed with the showing that the physical assets of the United States, such as lands, waters, minerals and forests, had a value of $100,000,000,000. Then somebody showed that the country's vital assets, by which is meant capitalizing the economic products of the lives of the people, were from three to five times greater than the value of the physical assets.

Thus, it suddenly became apparent, that the United States had about $500,000,000,000 in vital assets, which it was making no effort to conserve. Furthermore, the country was losing 1,500,000 of its human lives every year, and allowing 3,000,000 to be constantly incapacitated. This represents an annual financial loss of three billion—no, not three million, but three billion dollars.

As may be learned in any good compilation of vital statistics, most of the life waste is due to chronic diseases. Of the minor ailments, 90% are preventable.

The great battle of this day in the United States is no longer one of divided interests. The federal government, the state governments, and all their subordinate municipalities are perfecting a public health service that in the course of a few years should bring changes in social conditions in the United States of perhaps more consequence than the saving of billions of dollars in physical and industrial wealth that will follow the eradication of preventable diseases.

The control of preventable diseases is an important factor in the lessening of chronic diseases.

The educational campaign that is acquainting the people with the nature and origin of diseases, explaining the results of failure to combat the spread of germs and various infections, and prevailing upon the people to unite in local campaigns for the preservation of public health, is now under way in practically every community in the United States. Old prejudices, even superstitions, in rural communities are being broken down with demonstrated facts. In some localities it has taken a long time to convince the people that malaria is transmitted by mosquitoes, and not the result of breathing "swamp air."

This campaign is receiving publicity in endless ways. All newspapers and periodicals attach much importance to accurately written and carefully considered health news. Most state departments of health conduct a health news service for the benefit of the public. The statement may be risked that at this time no other subject in the world, not excluding European war news, is receiving in the United States the amount of publicity that is being devoted to what broadly may be called the conservation of human life. And there is no likelihood of its abatement, for we are learning that this is the greatest subject in the world, and will forever remain the greatest subject.

Science is convincingly demonstrating the fact that right living is not only increasing the span of human life, but is giving to the individual greater mental and physical efficiency throughout the different periods of life. By the easily possible control of preventable diseases, and the observance of known hygienic and sanitary rules, it is estimated that the normal human life in this day could be increased about fifteen years.

The lengthening of human life with health would decrease the burden on the productive period of the individual, giving the latter a longer time with greater strength to accumulate the wealth necessary for maintenance in the years when productivity wanes.

The end of the working period is commonly fixed at sixty years. There is abundant reason for the hope that biological science may extend this limit to a much later period in life. Not only is the average duration of human life increasing, but the rate of increase is also increasing. During the seventeenth and eighteenth centuries the lengthening of human life was about four years per century, and nine years during the first three-quarters of the nineteenth century. The present rate in Europe is seventeen years, while in Massachusetts and Prussia it is relatively fourteen and twenty-seven years. The average rate of improvement for all countries is about fifteen years. In Prussia, a highly conservative country in the discovery and application of scientific

medicine, conditions prior to the outbreak of the present war warranted the estimate that if progress had continued for a century at merely the present rate, human life in that country would have been twenty-five to twenty-nine years longer than at the present time.

As an emblem of individual freedom and independence, we point with blustering pride to the great American eagle. We are given to the statement and to the feeling that in this land of the free we may do as we please, so long as we do not violate statutory law. Some declare that if they are able to pay for their whiskey, they have an inalienable right to drink any quantity of it; or, if by their own endeavor and ability they are successful in accumulating money, they are privileged to spend it in their own way and without regard to other persons.

There was never a worse philosophy in the world. There was never more falsehood concealed under the covering of ignorance.

No man in civilized communities has a right to do as he pleases, unless he is pleased to realize the fact that he is a dependent member of society and a beneficiary of its institutions. Our individual happiness is measured by the comforts and conveniences which society has assembled for our use, and by our intelligent use of them. We are bound by both economic and moral obligations.

No man is free to do as he pleases, independently of what the effect may be upon other men. He is not free, for example, to indulge in any excess or in any conduct that will decrease his ability and capacity for contributing in full measure to the welfare of other men.

We have a most inadequate conception of our supposed individual rights and privileges. Men commonly declare that they will permit nobody to say how much whiskey they shall drink, or criticise them for the kind and quantity of food they shall consume. Such an attitude is not only ignorant and vicious, but a confession of sordid selfishness of which only a savage might boast without a feeling of shame.

It is the glorious province of human progress in this world to convince all of us as the generations pass that in the surroundings of enlightened society men more and more should feel their dependence upon each other, and realize more fully that the conduct of their lives should increase and not diminish the sum of human happiness.

In the exercise of this so-called inalienable right to do as we please, thousands of men forget that by this contempt of their obligations to society they may be overtaken by disease and poverty as the result of their wasteful and ill-considered conduct, and ultimately become burdens upon the very social organization whose rules and regulations they have so lightly considered.

Accordingly, those who indulge in dissipation that destroys mind and body, while vehemently asserting that they are free to do as they please, are lacking not only in common honesty and patriotism, but are asking society to pay the bills. They are consuming and destroying resources which other men have brought together for the common good of humanity, and which men have struggled to create since the beginning of time.

No man has the right to impair to the slightest degree the efficiency of human life. He has no right to disregard the laws of health, for to the extent that he does so, he becomes a pauper and a burden upon society. He has no right in serving his own selfish purposes to use his property in a way that will result in injury to public health. He has no right to shirk his duty in contributing to public revenues intended for the betterment of social conditions from which both himself and his neighbor mutually are to derive benefit.

What should be the outcome of all this high endeavor for the conservation of human life? Concede the changes that would greatly lengthen the span of human life, insure comparative freedom from disease, and give to each individual reasonable opportunity to exert to full capacity his constructive and productive energies. Is it the expectation and desire of society that the physically and mentally improved man of wealth shall use his additional powers merely for the purpose of growing richer? That the farmer shall merely plant more acres and cut a wider swath with his scythe? That the

philosopher shall devote himself more constantly to the contemplation of the abstract? If human happiness is to be increased, shall it be merely the physical and sensual?

Somewhere a noble ideal of human destiny must be linked with this great movement of the conservation of human life, to make it worth fighting for. There must be right motives and inspirations for human happiness. Disease is commonly associated with poverty and vice, which cause most human unhappiness. Metchnikoff asserts that health and morality are correlative, if not interchangeable, than which a truer and more discerning statement was never made.

Should we not expect the ideals of a stronger and happier people to express a finer conception of the duties of individuals toward each other? Dreaming of a nobler existence for humanity is worth while, especially if there is work to make the dream come true. With all its surpassing charm, Greek civilization failed to the extent that it was lacking in the elements of compassion. There was plenty of retribution and vengeance, but not much human sympathy, especially for the poor and the weak.

Not until about two thousand years ago, in the multitude of beliefs that the world had known, was there an ethical appeal that deeply and permanently touched the hearts of men. Jesus Christ reconstructed the foundations of society when He taught men to believe that each was the other's keeper, and that men should do unto others as they would have others do unto them. In this a new hope was given to the world. Nothing may be substituted for it. It measures all depths and heights, and is adapted to all relations.

In this great movement for the conservation of human life it should be possible to invigorate the spiritual no less than the mental and physical elements of human society. Disease and uncleanliness are synonymous. Filth and disease are born in the same bed. Clean bodies, clean minds, clean souls.

At no other time in history has the opportunity been greater, nor science more willing, to serve humanity.

DISCUSSION.

Dr. J. H. Florence, Houston, Texas.—There is not much to be added to what the essayist has said. There can be no doubt but what the conservation of public health is the greatest question before us today, particularly in connection with the European war, and one great step is agitation, agitation. That is the keynote. People in time of peace have got to be prepared to go to and demand of the legislature that health authorities be clothed with the proper authority, and with money and full-time health officers, money, men and authority will do the rest.

I wish to thank the doctor for his paper.

MALARIA AND PSEUDO-MALARIA.*

By Arthur A. Herold, M.D.
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Shreveport, La.

Malaria, as we know, is a clinical entity, a disease caused by the specific organism, known as the plasmodium malariae, the hemameba malariae, etc. But, in the minds of many people, this is more of a condition than a disease, we often hearing expressions of "full of malaria," "a touch of malaria," when, as a matter of fact, the disease can not be demonstrated either from a microscopical or clinical standpoint. I regret to state that physicians are, as a rule, responsible for this misconception.

The object of this paper is to bring before you certain points in the diagnosis of malaria and to venture some assertions which may bring out discussion on this subject—one of such vital importance to our Southland. I refer to diagnosing malaria as such and not deceiving ourselves or our patients by calling auto-intoxications, incipient tuberculosis, choleangitis, typhoid, paratyphoid, etc., malaria, simply because they happen to exist in a community that has or had some malarial fever. Why, I have seen advanced tuberculosis diagnosed as "malaria with intercostal neuralgia and bronchitis." Such errors are, it is true, due to carelessness rather than ignorance.

Chills with fever and sweats, occurring every day at the same time, do not necessarily mean malaria—they may be septic.

*Read in Section on Public Health, Southern Medical Association, Ninth Annual Meeting, Dallas, Texas, Nov. 8-11, 1915.

A differentiation by a blood smear will easily clear this up; regardless of the finding of the plasmodia malariae, we may estimate the leukocytes. And now, mentioning blood examinations brings on "more talk." Many of our friends, especially teachers, tell us that the blood should always be examined before administering quinine. This is, by no means, always practicable, for several reasons, to-wit: (1) Many physicians are not prepared to make the examinations and have no laboratory convenient; (2) often the case is encountered a number of miles from the physician's office and he is caught unawares, having no slides with him, and he has not the time to go after them and the patient has not the money to pay him for the double trip; (3) even tho free laboratory facilities at the State Board of Health office may be offered, it is often not feasible or safe for the patient to wait a day or two for a report. Therefore, I dare say 90% malaria is diagnosed clinically and many cases of "pseudo-malaria" are also diagnosed clinically among these as malaria.

In my particular locality, northwest Louisiana, malaria has been more plentiful this year than for several years past, due to the high water, the excessive August rains and the late fall. We have been able to demonstrate, microscopically, the tertian and estivo-autumnal malariae, especially the latter. In an experience covering over eight years I have not seen the quartan parasite there.

Generally speaking, there are three methods of diagnosing malaria: First, by the therapeutic test — purely empirical, but in common use. I know that this is familiar to most of you: Called to a case of fever, tentative diagnosis of malaria, quinine given, either at regular intervals or before the expected chill, fever persists, *physician* sweats, more quinine; called again, decides to have blood test made for typhoid, paratyphoid and leukocytosis. Or, perhaps, patient takes quinine and no more fever; therapeutic test proves either that patient *had* malaria—or that *he did not have it,* auto-intoxication, febricula or what not, which would have subsided after a cleansing of the intestinal tract alone. In other words, it proves nothing.

Second. By the clinical examination, with history: malaria in community, mosquito bites, a severe chill with high fever, perhaps an enlarged, tender spleen, etc. Here again we are only reasonably sure; not positive.

Third. By the blood examination, the most scientific, but not always definite. Remember a negative laboratory report means nothing; there may be only a single infection and the blood may have been taken at an inopportune time; perhaps the microscopist may be in a hurry and therefore does not search thoroughly enough; then, again, as very often happens, the patient may have taken enough quinine, himself, either as such or in one of the many chill tonics, to prevent us from finding the plasmodia in the superficial blood. Positive findings, of course, mean malaria, but not, necessarily, *only* malaria.

So much for difficulties in diagnosing. Now for some pitfalls or "pseudo-malaria." The following cases are illustrative:

Case 1—White, female, aged 11. Had been subject to spells of fever nearly every summer, temperature running an irregular course, with no chills; had had several physicians, but no blood examination had ever been made; diagnosis of malaria on each occasion, a number of doses of calomel and constant use of quinine had been the therapy until the fever ceased, which was usually at the end of ten to fourteen days. I gave an initial mercurial purge, then on a restricted diet, while I made a careful blood study. Several smears were negative for malaria. Widals were negative for typhoid and paratyphoid and blood cultures were also negative; the only abnormality that I could find in the blood was a moderate eosinophilia. No further medication was given and patient was comfortable throughout the attack, which lasted, all told, about one week, with no recurrence. Diagnosis, autointoxication.

Case 2—Mrs. H., white. Was visiting another city when she developed a chill and high fever. Clinical diagnosis of malaria was promptly made and the usual treatment instituted; quinine continued for six days, in spite of its ineffectiveness. In answer to my telegram, was advised that it was a plain case of malaria and that the plasmodia were present in great numbers. Patient was then brought home, with temperature 102, after which she received no more quinine. Repeated blood examinations were negative for the malaria plasmodiae. Widals reaction was positive for typhoid, temperature fell by lysis and patient recovered at the end of five weeks.

I could cite many more such cases and I feel sure that my listeners also know similar ones. To go on would bore you, so now for my point:

What, now, are the disadvantages of faulty diagnosis?

1. We uselessly cinchonize, and thereby often depress, surgical cases and consumptives.

2. The art of medicine suffers by "slipshod" methods, as the laity learns to cinchonize all fevers and then, if quinine fails, to call physician, who should have been given opportunity to diagnose at first.

3. But most important. Efforts at prophylaxis and eradication are greatly hampered; for, if we are sure of the diagnosis, it is our duty not only to relieve the attack, but, also, to use every effort to free the patient's blood of the infection and thereby prevent him from carrying malaria from one season to the next.

I shall now draw conclusions, which I expect to be criticised severely in the discussions which follow.

1. The most valuable means of diagnosing malaria is by the blood examination, which, if positive, is conclusive.

2. Inasmuch as the facilities are not always at hand for taking smears and inasmuch as a negative report means nothing, we are justified, in some instances, in making a diagnosis clinically.

3. When in doubt and when the patient's general condition is good, especially in those cases where he has already been partly cinchonized, the therapeutic test may be tried, but never over 72 hours.

4. We should always carefully examine, clinically and hematologically, those cases of vague, low grade fevers diagnosed as malaria.

5. The vital necessity of care in diagnosis is not so much for the individual case, but for prophylaxis of the community.

TREATMENT OF MALARIA RELATIVE TO ITS ERADICATION.*

BY T. E. WRIGHT, M.D.
Monroe, La.

In the preparation of this paper I have endeavored to maintain the viewpoint of the average practitioner, and yet, with proper perspective interest, the more technical man. An apology is not offered for the elementary features of this paper.

That we have malarial carriers throughout malarious districts, and often in other districts, is no longer a question; that these carriers play an important role in the dissemination of the disease is just as true. To do very effective work against malaria we must attack both the mosquito and the carrier.

For convenience all carriers may be divided into two groups. One group never comes under the observation of the physician; the other group has been under the treatment of a physician during an acute attack or some recurrence, and has not had the blood properly sterilized so far as concerns the plasmodia of malaria. This group of carriers is not a very considerable number when compared to the great number of carriers scattered over the country, yet it is a very important group, in that the physician can here render such valuable service; this group may in time be eliminated.

This naturally brings us to the consideration of the question: What method or plan can be used by the physician by means of which the blood of the malarial patient may be more often and more thoroughly sterilized of malaria while he is yet under the control of the physician? This loss of control before the treatment is completed is doubtless responsible for many carriers.

The usual method of treatment among the rank and file of general practitioners permits at least a tentative loss of control when the patient is given instructions as to subsequent medication. That a very small per cent of malarial patients carry out instructions for subsequent treatment is too well known to discuss here. The average patient has a physician just to "break the fever" or "break the chills."

An unusual method of treatment and yet one that deserves some consideration at our hands, I have tried out as faithfully as possible. I refer to the intravenous use of quinine in malaria.

Unusual opportunities have been offered at the St. Francis Sanitarium, in North Louisiana, for the study of malaria. This institution is utilized by the Missouri Pacific-Iron Mountain Railroad System as a hospital for its men. Because of its location this hospital receives quite the

*Read in Section on Public Health, Southern Medical Association, Ninth Annual Meeting, Dallas, Texas, Nov. 8-11, 1915.

largest part of the malarial cases on the entire system. During the years of 1912, 1913 and 1914, according to the records, there were treated at this place 747 cases of malaria among the railroad men. During this year, beginning January 1st and ending November 1st, there have been treated here 249 cases.

During the past season, and with considerable interest, the hospital department of this railroad has considered the question of an intensive type of treatment; a treatment that will give a constant, prompt and thorough result. The thoroughness of the treatment has been considered largely along economic lines; a saving of two or three days in the hospital, without any recurrence of an attack, is greatly desired, and is a matter of considerable importance when applied to several hundred men within a year.

Again referring to the hospital records, it is found that in 1913 the average days in the hospital per patient of the malarial patients for the full year was 6.5 days; in 1914 it was 6 days, and of the 1914 list 30 cases were selected and treated intravenously. In 1915 up to November 1st, during which time more patients have been treated for malaria than either of the two preceding years, the average number of days in the hospital per patient was reduced to 4.1 days. Of the 1915 number, 91% had the intravenous treatment.

This economic feature of intensive treatment and prompt results, when applied to the whole malarial district in the South, is a matter of much greater importance and should receive serious consideration on the part of medical men.

Last November, at Richmond, I reported to this Association in a paper, "Thirty Cases of Malaria, Estivo-Autumnal, Treated with Quinine Intravenously." This series was taken from the 1914 number I have mentioned above. Through the different foremen and through other channels I have been able to make a check upon these thirty cases as to a recurrence. Of course a distinction must be drawn, when possible, between a recurrence and a new infection. Of the thirty cases reported in last year's series I have a check on twenty-two; of this number six had a second attack; of the six, four were evidently reinfected. Of the 249 cases of railroad patients treated this year, 228 were treated with quinine intravenously; of this number only 195 were confined in the hospital; the others were out patients. As far as possible we are checking up this list as to recurrences; as yet the check on these cases is incomplete, because some of the more recent ones have not yet had time for a recurrence. However, it appears at this time that the percentage of second attacks in the cases treated this year will be very small. A more detailed report on the check of this second series of cases will be published when complete. Private cases, while mentioned, are not included in this series because of the difficulty in keeping complete records.

I have treated both tertian and estivo-autumnal by this method with uniform results, the estivo-autumnal constituting approximately 70% of the cases.

The observations made upon the original thirty cases reported have been continued during this season, though not so extensively as last year; with few exceptions our findings have been the same. Some new observations I will mention here as of considerable importance.

The ecbolic action of quinine, in 10 grain doses, when given intravenously, is unquestionably pronounced. Of eighteen cases of malaria in women treated with quinine intravenously uterine cramp developed immediately in five. Fortunately, the method was not used during pregnancy before this particular effect was noticed. Even with this small number treated I believe that, without a doubt, pregnancy contraindicates quinine administered intravenously.

Three cases of idiosyncrasy, one a vomiting idiosyncrasy, the other two urticarial in type, were treated. The first mentioned had a more or less active estivo-autumnal infection extending over twelve weeks, which responded promptly and no vomiting ensued. The urticarial cases had the same treatment as to dosage and frequency of dosage as other patients and no rash was noticed. One of the last mentioned cases had previously been confined in this hospital for an operation, and during his convalescence was given the usual ward tonic which contained, among other things, two and one-half grains of quinine. After the second dose the urticaria appeared. As above mentioned, no urticaria appeared when treated intravenously.

I mention below a few points of general interest relative to this method of treatment. The quinine is given now in a 20cc all-glass syringe. The size of the needle, as well as its length, is of some importance; I am now using a twenty gauge, 1¼ inch needle, which is most satisfactory. The dose is uniform and is ten grains. Rather frequently it has been noted that if the dose is administered only once in twenty-four hours the impression made upon the disease is inadequate and the general result is not prompt. We are now giving at least two doses during the twenty-four hours, with from eight to ten-hour intervals. Not infrequently, in the severest cases, the treatment has been given in eight-hour intervals for four or five doses.

Relative to the rate of administration: Aside from saying that this should be reasonably slow, I do not attach any importance to this point. Every molecule of our quinine solution must come in contact with living red blood cells whether given rapidly or slowly. It is a dangeros excuse for giving a concentrated solution when we can say we are giving it slowly. I do not wish here to criticise Bacelli, who introduced this method. His direction for a slow administration was evidently an excuse for his concentrated solution. The claim that the blood will dilute our solution is in error; the dilution should be with reference to the blood.

Four cases of malarial hemoglobinuria were treated by this method, with recovery, which was rather prompt and uneventful. A full discussion of these four cases, while tempting, is impossible here.

The importance of using fresh distilled water in making up the solution, I wish again to repeat. I am inclined to believe, however, that a stock solution properly prepared, with the quinine added immediately, may be kept in the office and used for a reasonable length of time. Solutions made up and bottled in my laboratory and kept at varying periods of time of from one week to five weeks have been administered, and in only one of these test solutions was a reaction noted. Much of the difficult detail work incident to an intravenous treatment of quinine would be eliminated if a stock solution would keep. It is possible to have this stock solution put on the market by some of the large drug houses. I am inclined to believe, disregarding the few tests I have made, that quinine will inhibit the growth of the objectionable elements in old distilled water and saline when added to a fresh solution with the exception of an occasional mould. The most helpful aid to the physician in this plan of treatment will be the ampoule with the quinine in proper dilution, 5 grains in 10cc, or 10 grains in 20cc. Until an ampoule is on the market in proper dilution, I am inclined to recommend the stock solution purely as a matter of convenience, especially for institutional work.

The general technique is too simple to outline here. In my service in this hospital I have taught during this season eight of the nurses to give this treatment; and by the close of the season, nearly all of the visiting staff merely write their directions on the chart for an intravenous quinine treatment, as he would for an ordinary hypodermic treatment. It must not be construed from this that we attach such little importance to a treatment of this kind to risk it in the hands of incompetent assistants; however, such great importance has been attached heretofore to intravenous therapy, relative to its dangers, I mention this above for this special purpose.

Records of temperature and pulse have been made at the time of the treatment, and every hour thereafter until the temperature is normal. From this we have been able to approximate the time when a given case will reach normal temperature; and so constant have been the results, that the nurses on duty in the railroad service soon were able to approximate the time to within two or three hours when a given patient would reach normal temperature. The temperature of an estivo-autumnal case declined almost as rapidly as that of a tertian following a chill.

CONCLUSIONS.

1. Intensive treatment of malarial patients must be employed if we decrease the number of carriers.

2. The intravenous use of quinine, administered with proper care, in doses of ten grains, in proper dilution, repeated in from eight to ten hours once or oftener according to the case, is a type of intensive treatment that more nearly sterilizes

the blood of malaria than any other method heretofore employed.

3. Fewer cases of recurrence will follow the intravenous use of quinine.

4. The discomfort to the patient is slight, of short duration, not lasting over five or six minutes; no unfavorable effect has been noted upon kidneys, circulation, nervous system, eyes or gastro-intestinal tract; no vomiting is noted except in high temperature.

5. The ecbolic effect is sufficiently pronounced for pregnancy to be a contraindication.

6. Urticarial and vomiting idiosyncrasies do not appear to be evidenced in this method. No case of hemoglobinuria has followed its use.

7. The technique is so simple that nurses in training may be taught to administer quinine by this method with reasonable certainty.

8. An ampoule of proper dilution is indicated. There are none at present on the market of sufficient dilution to be safe for intravenous use. These will appear during the next season. In the absence of a proper ampoule I recommend a stock solution, especially for institutional work, as a matter of convenience.

9. The results in thirty cases treated last season, 228 treated this season, have been uniformly prompt, constant, and entirely satisfactory.

10. In the railroad service at the St. Francis Sanitarium, in Monroe, La., the men leave the hospital and return to their work two days earlier, according to the hospital records, than by the former method of quinine by mouth. The hospital records further show fewer returns this season than ever before.

11. While the technique is simple, I would not urge any physician who is not reasonably careful as to asepsis to use this method of treatment. Reasonable care, at least, is imperative.

"A Concentration Method for the Diagnosis of Malaria," by Drs. William Krauss and J. S. Fleming, read in this Symposium, was printed in our February issue (1916), pp. 141-144.

DISCUSSION SYMPOSIUM ON MALARIA

Papers of Drs. Herold, Wright and Krauss.

Dr. R. H. von Ezdorf, U. S. P. H. S., New Orleans, La.—The subject as presented in the papers could be widely discussed. I will only touch upon several points that have been brought out in these papers. Dr. Herold uses the term pseudo malaria, which I believe is unfortunate. I notice that he specifies the low grade fevers as belonging to pseudo malaria. The term masked malaria has been used to embrace such diseases as that spoken of and has come to be used to embrace nearly every disease unrelated in any way to malaria. This term pseudo malaria should not be used any more than pseudo-any-other-disease when malaria is meant.

The points in the paper are well covered and there is nothing that I could add to it. In fact, all of the papers that have been read on the treatment of malaria are excellent. I want to congratulate the doctors on the excellent results obtained.

With reference to the paper of Dr. Wright, I can not report on as many cases as haye been presented by this method of treatment. From what I know and from what I have learned in talking to physicians regarding the results of intravenous injections of quinine, the results have not been uniformly as good as those that have been reported.

I believe that we should limit the intravenous use of quinine to the treatment of complicated or the more pernicious forms of malaria. I use and advise a less concentrated solution of quinine than the one cited by Dr. Wright. I think that 5 grains of quinine for each 50cc of normal salt solution to be a safer dilution. I have used 15 grains of quinine in 150cc of salt solution for intravenous use and repeated it every 18 to 24 hours until four doses have been given.

Dr. Wright makes a point that by the method used by him cases of malarial fever remain in the hospital much shorter time. I believe that similar results can usually be obtained by the use of quinine in solution given by mouth, as the acute symptoms are easily controlled. If a case of fever is not controlled after five days of treatment with quinine, given properly, then it is likely not to be a case of malaria. I usually treat my cases by the use of quinine given in acid solution administering 10 grains three times a day or 10 grains every six hours until the acute symptoms are relieved; as I have stated, in a case of malaria good results are obtained within three to five days.

With reference to the concentration method described by Dr. Krauss, this is a new one, and, knowing how accurate he is in his work, we can accept it as unquestionably reliable and accurate. I think that the method has its limitations and is to be used only by men that are versed in laboratory technique, and that it might be done in hospitals. The concentration method employed by me is what is generally known as the "thick blood smear method." This has given us excellent results. I believe the method should be more generally used by the practitioner. It is convenient and requires no additional apparatus in the technique of making it or of staining it. However, in using the thick blood smear method one should be thoroughly familiar with the parasites in the thin blood smear before undertaking the thick blood smears and he should also make trial specimens with known cases in order to familiarize himself with the appearance of the

parasite in the thick blood smear. I believe that the method is the only one practical in the examination of blood of a large number of persons where we desire to establish a parasite rate. The thick blood film method is advocated by many men who have undertaken to do work of this kind. The most recent that I might mention is that of Barber and those associated with him in their work on the subject of malaria in the Philippine islands, which has been described in the Philippine Journal of Science, May, 1915.

The Public Health Service has thus far completed an examination of 13,526 persons, of which number 1,797, or 13.28%, were found to contain parasites. In a special study made by Technical Assistant H. A. Taylor, connected with the malarial investigations being conducted by the United States Public Health Service, he examined 526 thin smear preparation corresponding to the 526 thick smear preparation, the thick all positives, in which parasites were found. In the thin preparation he could only confirm the findings in 125, or 23.7%. You can see from this that the thick blood smear has a greater advantage over the thin. Even in thick blood smear work the element of time devoted to an examination is a factor. In our malaria index work we make it a rule to examine thick blood smear not longer than five minutes, but Barber in the Philippines, and others, and even in our own experience we may sometimes find parasites in the thick blood film where they are extremely scanty, if the examination extends over a longer time—that is, ten or possibly fifteen minutes.

The method of Dr. Krauss, in which a much larger quantity of blood is used, would undoubtedly give still better results where the parasites are very few in number. One point of interest I failed to mention in the examination of blood smears for establishing malarial index is the finding of the gametocyte in but 24% of those in whom parasites were found. This means that about one out of every thirty persons of the 13,526 examined was a carrier, a potential factor for the transmission of malaria. In other words, a malaria-bearing mosquito biting such carrier might become infected, as the sexual forms necessary are present in the blood. From my experience, I believe the thick blood smear method to be sufficient in the examination of persons suspected to have malaria.

Dr. Louis Leroy, Memphis, Tenn.—The subject is one which has been extremely interesting to me recently, because I have been able to apply it largely to the development of the method of Dr. Krauss; and because a great deal of the work has been done with some of my patients in the city hospital service in Memphis, and I can merely say that it frequently has happened that with a reasonably good laboratory force we have repeatedly had negative reports for both thick and thin smears when examinations by the concentration method have shown positive and subsequent history bore it out.

In one case of hemoglobinuria repeatedly careful findings failed to show any parasites, but they were found upon subsequent investigations by the concentration method of Dr. Krauss. In another case gametes were found, in a case of hemoglobinuria. So that it is a considerable advantage in the ordinary case.

There is one thing that the concentrated method does. It does not destroy your parasites. It gets them in shape you can observe them just as they are. I regard that, from the interne's standpoint, a very valuable thing.

As to the point about the intravenous use of quinine, I have used it a great deal this year and have had very good results. I have used it in a good deal larger doses; used it up to 25-grain doses with satisfactory results. The amount of dilution that the doctor insisted upon is not always necessary.

Dr. Nathan Barlow, Honduras: I was very glad to hear Dr. Leroy's discussion. I have treated about 100 cases of malaria with intravenous mercury, 50 of them with mercury alone and 50 of them with mercury and quinine together. The results were such as to confirm most of Dr. Leroy's remarks and also the results obtained by Dr. Lyons as reported in the American Journal of Tropical Diseases and Preventive Medicines.

As sufficient time has not yet elapsed to be sure of any relapse in these cases, I would prefer not to enter into the discussion of this point further than to state that I believe that mercury will be found to be of value as an adjuvant to quinine, especially in aestivo-autunnal cases.

In Dr. Herold's paper I thought that he omitted one disease which is often mistaken for malaria. Many cases of hook worm present a daily fever, weakness, emaciation and enlargement of the spleen and are almost indistinguishable, clinically, from chronic malaria. Inasmuch as the antipyretic and tonic effects of quinine may cause temporary improvement in such cases, they may often be mistaken for malaria for long periods of time.

With regards to Dr. Wright's report, I have myself used quinine intravenously very extensively in my work in Honduras, often giving as many as from four to six intravenous injections of 15 to 25 grains. In nearly all of these cases subsequent oral administration was required to remove the parasites from the peripheral blood; and I can not believe that a few intravenous injections can be relied upon to cure cases of malaria.

As Dr. Wright states that there have been many more cases in his section this year than in previous years, it seems probable that the greater number of cases treated by him were of very recent date, and we know that such cases are often cured by comparatively brief administration of quinine.

I think that all of us, in reporting results of treatment of malaria, should pay particular attention to classifying the cases according to the length of time that the disease has been present before treatment was begun.

Dr. C. P. Gray, Monroe, La.—There is one point which was brought out by Dr. Herold which I wish to commend. This is the mistaken idea so many physicians have had in regard to treating every low grade fever or every chill and fever as malaria. The mistake has been that a physician sees a case as above mentioned and makes a snap clinical diagnosis as malaria and so treats it for from one to three weeks with no improve-

ment, when it finally dawns upon him that the case in question is one of tuberculosis or some other similar condition which is associated with a low grade fever or with both fever and chills. I could mention several just such cases and am sure that you older physicians could recall even more.

As a whole Dr. Herold's paper was very practical and well chosen to come under this Section, and contains much timely advice in the diagnosis and handling of malaria cases.

With reference to Dr. Wright's paper on the intravenous use of quinine, I must say I am very glad to have heard the doctor read this paper. I have nothing to say but to commend and endorse what the doctor has said. I have been more or less familiar with Dr. Wright's work in handling his malarial cases for the past two or three years, as we are both on the visiting staff at the same hospital. For a period of about nine years I did a large general practice in a so-called malarial district, even much worse than we have around Monroe. It was then that I tried quinine in every form and in almost every known mode of administration. I finally adopted the intramuscular method, and while in the majority of the cases I got good results, it was only a question of time before I began to have sloughs and large indurations with an area of anesthesia which persisted for an indefinite length of time. This, no doubt, you are all familiar with, and must admit that it is a very serious drawback to this method. Upon the advice of Dr. Martin, of Hot Springs, I began the use of the di-hydrochloride put up in ampoules in seven and one-half grain doses. This form proved satisfactory in many cases, but still there was that severe form of malaria which demanded radical and severe treatment if we were to be of service to the patient. It was in this class of cases that I first began the intravenous method as you have heard described by Dr. Wright. I have used the method in something like forty-five cases and have no cause to regret its use in a single case. I would not, however, advise its use as a routine measure in every case of malaria, but in those severe cases and in the case where it is doubtful that the patient will follow the treatment outlined or in the case where time is a factor, I would not hesitate to use it nor recommend its use. The exact size of dosage or some of the minor details may yet have to be worked out, but the method has clearly demonstrated that it has a place in the treatment of the severe types of malaria. To make my position clear, I wish to report my experience with the method in just one case. A patient was sent to me with an acute appendix. During the routine blood examination, it was found that he was also heavily infected with malaria. I had to operate on the case at once and remove a big, red, rosy appendix. As early as possible I began the administration of quinine by mouth with the hopes of eradicating the malaria. The patient was apparently relieved of the malaria and his recovery was otherwise uneventful. Two weeks later this same patient was sent back to me with a very severe case of malaria. I then administered to him three intravenous injections of seven and one-half grains of bisulphate of quinine in 20cc of freshly distilled water on successive days. The patient remained in the hospital four days and has since been in good health.

Dr. A. A. Herold Closes.—I merely wish to ask Dr. Wright to bring out. if he knows, the application of the intravenous method as to whether it actually cures any more than by mouth or otherwise.

The general object of my paper was to call attention to the matter that has been brought out so much before us, viz: the necessity of curing the disease and not just stopping the attack. If we did that in all cases and prohibited the importation of the malarial carrier in every way, we would soon rid the South of the scourge.

Dr. T. E. Wright Closes.—I am particularly pleased with the favorable comment upon my paper, but more pleased by the questions that have been asked.

Referring to the matter of dilution, I do not agree with Dr. von Ezdorf relative to the dilution mentioned in his discussion. Last season I gave all intravenous treatments of quinine in the same dilution mentioned by him—that is, 15 grains in approximately 200cc of saline. This season I have brought down the dilution to 10 grains in 20cc of saline. The reason for this is obvious—the convenience of the 20cc syringe, together with the fact that it is just as safe and effective, is enough to justify the change. Again let me repeat that there is a danger point in the dilution of quinine used intravenously. This is best demonstrated by a simple test that has been made by different workers in malaria. I mention this test at this time for obvious reasons. Washed red blood cells are put in small test tubes as if for a Wassermann; different dilutions of quinine in saline are added to each, beginning with a 1 to 1 dilution; it is found that solutions of quinine up to approximately one to twelve or thirteen dilution will produce hemolysis; above this no hemolytic effect is noted. Now, 10 grains in 20cc saline is a 1 to 30 dilution, and this quantity can be administered about as easily as 5 or 10cc, and certainly is much safer. Not long ago I saw in consultation a case of severe embolism in both arms, due to a concentrated solution. This concentrated solution was nothing more than the ampoules of quinine now on the market. I must admit that Baccelli gave his quinine in a 1 to 10 dilution, and yet Baccelli, according to our best records, gave it only in his pernicious cases; and it is possible that Bacelli did not record some accidents he must have had. While I am not inclined to go back to the high dilution as used last season, I am at the present time unquestionably opposed to using a stronger dilution than I have just recommended. Certainly, with the large number of cases treated this season with this dilution, if it is unsafe, some ill effects would have been noted on some.

Regarding the question asked as to whether or not we know a patient is well when he leaves the hospital in such a short time. This is purely a matter of keeping a check on the patient. Our system of records and checks against these cases leads us to believe that if they do not return and do not have a recurrence, except in a few cases, we naturally class them as cured. While some of these cases are not heard from again after

they leave, a very large percentage is checked against from time to time with information coming through the different foremen and others belonging to the same group of men. It must not be understood that when a patient is in our hospital for four or five days, and all symptoms have been relieved, that we would be so particularly optimistic about the permanency of the cure if in following up this patient through some good checking system we did not have the evidence that he remained well.

In the matter of the acute and chronic cases. These were separated in the original series of thirty cases reported a year ago, but in this series they have all been classed together. Of this second series a rather substantial percentage had evidences of chronic malaria. Relative to the treatment in the acute and chronic, three intravenous treatments, as I have outlined, are enough for an acute case, one the first day, two the second, or two the first day and one the second, depending upon the time of the first treatment. A fourth or even the fifth may be given in very severe cases, with eight or ten hour intervals. No subsequent treatment is needed in acute cases. I am inclined to believe that in the chronic malarias some sort of subsequent treatment is advisable; the small number of relapses or recurrences we have had are in this type. At the present time I would recommend one or two treatments one day in each week for two or three weeks after the patient has been discharged, for the chronic type.

I wish to refer again to the constancy and promptness of our results, and in doing so I will give a case in illustration. One case came to the hospital at 10 a. m. with rectal temperature 106, pulse about in proportion. He was quiet, mental condition normal; skin hot and dry; spleen very much enlarged; blood examination showed three to seven estivo-autumnal plasmodia to a field. At 11 a. m. he was given the usual intravenous treatment. The nurses at once began approximating the time when he would reach normal temperature. He had not taken any quinine for this attack. Eight hours later he was given a second treatment. At 2:30 a. m. the following morning the temperature was normal. It is interesting to state here that the nurses who approximated the time had been on this service for some time and none of them were further than four hours from the exact time when the patient reached the normal temperature. I mention here a rather severe estivo-autumnal case because those of you who are acquainted with the usual method of giving quinine by mouth have an idea about how much it would require to make a substantial impression upon the general condition of the patient as well as upon his temperature.

Referring to the stock solution. In the absence of a proper dilution on the market of an ampoule I recommend a stock solution, especially for institutional work; certainly it shortens the labor incident to an intravenous treatment. When we have on the market a proper dilution in ampoules, 5 grains in 10cc or 10 grains in 20cc, it will be a wonderful aid to the general practitioner and I recommend its use.

A number of elementary features in the technique I have outlined in my paper for the special benefit of the average practitioner who might be a beginner in this line of work. Along this line I have done my best to maintain the viewpoint of the average doctor, in whom I have considerable faith, and for whom I have a very high regard. His duties are arduous and his methods of diagnosis, while reasonably accurate, are often subjected to question; and any assistance that can be given to him in the matter of prompt and effective measures in the treatment of this, our common enemy—malaria—should be given.

Dr. William Krauss Closes.—In regard to the intravenous administration of quinine, it is known that Bacelli recommended its use more than twenty-five years ago. I have used it in my service for as long as fifteen years. We learned very early that it was not safe to inject concentrated solutions. Bacelli recognized the danger because he counsels very slow injection. He even goes so far as to direct the physician administering the quinine by vein to assume a comfortable attitude so that it can be delivered drop by drop. In view of the tendency of the plasmodium falciparum to cause the containing blood corpuscles to clump, resulting in the obstruction of certain vascular areas, I am in favor of giving it diluted with 200cc or even more of salt solution in order that these congested areas be flushed out if possible.

Our object in treating malaria is to convert the blood into a chemical solution which is toxic for the malarial parasite. It is logical, therefore, to introduce the chemical agent directly where it is wanted to get the quickest and most pronounced effects. The blood should be a 1 to 10 thousand or even a 1 to 5 thousand solution of quinine in order to effectually destroy the parasites. Approximately this equals a maximum daily dose of one-quarter of a grain per pound of body weight.

With reference to my technique for concentrating the parasites, I want to say again that any one may devise a method different from this which might be equally as good, or perhaps better. The idea of a concentration method was suggested to me by Dr. Haskell, who said one ought to get parasites in a sediment of a centrifuge tube similar to tubercle bacilli in the antiformin method. The work was undertaken by my assistant, Dr. Fleming, and he, assisted by Dr. Rucks, with occasional corrections and criticisms by me, reduced it to a technique. Many plans were tried but rejected, because while satisfactory in our hands, they would not answer to put in the hands of those unequipped with every facility. Modifications were attempted and they were rejected until about seven hundred experiments had been made. It was my purpose to furnish a technique free from ambiguities and difficulties, sufficiently flexible so that it could be applied under a variety of conditions.

The objection might be raised that a general practitioner will not adopt a technique requiring vein puncture. I am sure he will do better at filling a bottle containing a previously prepared solution with blood, even if he has to make an incision in the finger to get it, than he would trying to make films fit for examination.

In our laboratory, as I stated in discussing Dr.

Stingily's paper, we receive blood upon paste board, window glass, stuck between slides or slide and cover glass, and in all sorts of ways except the right way, and I really think that more usable specimens will arrive at the laboratory when sent in in citrated salt solution. By studying the tables just once, one can become familiar with the time factors which are suitable in a given case. If the specimen is to arrive at the laboratory twelve hours or longer after removal, formaldehyde can be added at the source so that the blood will arrive in a condition of fixation. A reference to the tables will also eliminate the necessity of going over much ground, which will lead to failure. By adopting the time and dilution factor, which will give you a plus in the second and third tables you may rest assured that the parasites will be found, even though all other methods have failed.

Dr. Louis Leroy, Memphis, Tenn.—I wish to say another word of commendation of the method of concentration for finding malarial plasmodium, which Dr. Krauss has presented, as much of this work has been done on patients under my charge at the city hospital at Memphis. It has frequently occurred that where a very competent laboratory force has failed both with the thin and thick smear method to find parasites, they have discovered them by the concentration method and the history of the case subsequently bore out the findings.

Attention may also be called to the fact that with this method we are not liable to make mistakes of so-called artefacts, because each parasite remains in perfect form, the corpuscle having been dissolved we have it, and it is not masked by other material lying over and around it, and the parasite is not distorted by having been mashed in the process of spreading.

Again in the thick smear method unless a man has become more than average expert he is apt to find many things in the thick smear which will confuse him and which he may misinterpret for a possible parasite. This method, of course, is rather tedious and is not to be applied to the ordinary cases in which the old method is amply sufficient to give satisfactory results. In connection with the eradication of malaria I wish to make a preliminary statement to the effect that I have a method which I have been instituting in my service in the city hospital at Memphis this summer. The first suggestion was made from an article by Barlow in the Journal of Tropical Medicine a few months ago, in which two cases are reported which gave some evidence of benefit by intravenous administration of bichloride of mercury. In trying to determine what it was that gave the benefit they made a number of experiments and observed that the intra-corpuscular type of parasite gave no evidence of being affected by it, but that gametes disappeared from the blood soon after the administration. Further investigation has shown that gametes may be eradicated by the salvarsan and neosalvarsan intravenous injection, but that these substances have no effect whatever upon the occurrence of chills and fever in the initial attack, because these are due to the intra-corpuscular parasite. On the other hand, we frequently find patients giving us no symptoms whatever and be carrying large numbers of gametes in their circulation. Quinine has practically no effect upon the gametes and in order to eradicate the disease completely it is necessary to administer quinine for months, so that if at any time a gamete reverts to the vegetating type, sufficient quinine will be present in the circulation to cause its death. In this connection I will state again that I have examined thirty-odd cases of estivo-autumnal malaria, all of which were gamete carriers, and these have yielded to the intravenous administration of bichloride of mercury, in addition to the routine quinine, showing no gametes in repeated blood examinations within from 24 to 48 hours. The treatment by quinine has been continued until the immediate symptoms disappeared and the patients have been discharged with apparently no return of symptoms and nowhere showing gametes in the circulation.

The technique of the process is very simple, merely consisting of the intravenous administration of one-fourth of a grain of bichloride in 20cc of normal saline, given very slowly, so that it will have ample opportunity to mix with the blood and avoid local irritation. Usually a single injection is all that is required, but I have given two or three to a single patient.

A preliminary examination of the urine is always made to be sure no renal disease is present which might be aggravated by rather large doses of mercury. This is, of course, merely a preliminary report, based upon thirty cases, which have been so uniform as in my estimation to warrant the report.

A TWO YEARS PUBLIC HEALTH CAMPAIGN IN A RURAL COUNTY*

By Carl A. Grote, M.D.,
Health Officer Walker County, Jasper, Ala.

Most of us agree that public health is to a very large degree a purchasable commodity. We are aware, too, that this partial awakening of the possibilities along the lines of disease prevention has been brought about during the past few decades, and that ere long, not only the medical profession, but the masses will better appreciate its importance and will demand better public health service as economy. The United States, however, as a whole, has not kept pace with the rapid strides of progress in preventive medicine that have been taken by many of the European countries. During the past few decades our National Government has rendered a most excellent service through its Public Health Department. Some of our State Boards of Health have done work which has been

*Read before the Jefferson County Medical Society, March 13, 1916.

highly praiseworthy. Our large cities have put into operation scientific and systematized health departments, and to them, we might say in passing, is due the bulk of the credit for the reduced death rate of the United States as a whole. However, 52% of the population of the United States is rural, including towns of 2,500 inhabitants, and no provision has been made to render adequate and efficient health service for this class of our population. In Germany and in England, we are told, that the central health organizations are natural developments from the correlation of the local health departments, that the local, district, health authorities are highly efficient, adequate, and clothed with authority; and that the central health departments are more like the head bureaus of a great system. This is a striking contrast of public health organization. Our local health units, which are probably the most essential units, are just beginning to be born. During very recent years our attention has been called to this serious defect and some progress has been made toward correction. The states of Massachusetts, Pennsylvania, Maryland, New York, and Wisconsin have been divided into local health districts and are each endeavoring to develop a plan of work. I mention this in order to call your attention to the fact that no standard, or concrete plan, of public health work has been established for district and local health departments. And yet, we are practically all aware that the neglect of the rural population, which constitutes a large majority of our people, has been our most serious defect in public health work. In fact it is the missing link.

These facts were grasped by the medical profession of Walker County, Alabama, some few years ago, and so earnestly did they work to put into operation an adequate county health department that for the year 1914 the County Commissioners appropriated $3,000.00, with which to establish this system conceived by the doctors. It was then left for them to put their theories into operation. Their first step was to vote unanimously for the employment of a County Health Officer, who was to give his entire time to the development of a county public health system. And it might be said just here, with propriety, that the medical profession acted more wisely than they knew, when they employed a man to take charge of this work who was from without the county: he was free from all kinds of political, professional, and personal entanglements, and was therefore ready to begin work.

You can no doubt realize the difficulty of systematizing a work the dimensions of which none of us knew. But we began operation in the early part of the year, 1914, and for two years have worked continuously, trying as best we could to systematize a definite line of work. From the very beginning we saw that our success depended upon three underlying principles which were as follows:

1st. A plan of work which was entirely along the lines of preventive medicine, not curative, and therefore would not become distasteful to the practicing physician but would gradually command his enthusiastic support.

2nd. To do good scientific work, striking gradually at the things that were vital, and yet, use tact and patience enough to invite the good will and co-operation of all classes of people, without which failure was certain, appropriations could not be had.

3rd. To get all phases of public health work under one system of which the County Health Officer should be the executive officer.

How well we have progressed in laying a foundation for such work we shall not attempt to say. Many have been our mistakes and some of our efforts have undoubtedly been poorly rewarded, but we do feel that there is a growing sentiment for better health conditions throughout Walker County and the permanency of the work is assured. Briefly the activities of our department have been directed along the following lines:

First we have put forth every effort to collect complete vital, mortuary and morbidity statistics—complete statistics are the back bone of all public health work. We knew that we must get these statistics during our first year, in order that we might establish a death rate. Should we fail to get them during the first few years, thereby making a lower death rate than there actually was, no matter how hard we should work along the lines of prevention, complete statistics in the future would give us an increased death rate, a fact that

could hardly be explained to the masses. Every doctor, every midwife, and every undertaker has made satisfactory reports to our office and as yet we have not instituted legal proceedings against any one of them. However, we have found it necessary to check up these statistics by personally going into every section of the county and making inquiries of the laymen. Being constantly on the wing this has become almost second nature to us, and we believe that in this way we find a large percentage of our unreported births and deaths. We have established during our first two years a birth rate of 32.3 per thousand of population and a death rate of 11 per thousand. We know that this may seem to be a low death rate, but our birth rate is more than 7 per thousand above the normal, which indicates that we are collecting statistics. Another fact, too, is that we have so few negroes in our county, among which race the death rate is usually so high, our own death rate being 17 per thousand of negro population. But only 15% of our total population is negro, while in some counties in Alabama only 15% of the entire population is white, and consequently they have a high death rate.

As to infectious diseases the major, or more serious, diseases have been reported promptly and accurately, while it has been impossible to keep an accurate record of such diseases as chicken pox, measles, mumps, whooping cough, etc., so often not seen by the doctor. In the control of the more serious infections, such as diphtheria, scarlet fever, small pox, typhoid fever, etc., a great deal of effort has been put forth. During the two years the County Health Officer personally made 446 visits to diseases that were, or were thought to be, infectious, assisted in making diagnoses by laboratory methods, such as widals, diphtheria cultures, etc., and where indicated established quarantine. Sometimes we were called to the two extremes of the county, and have in going worn into rattle traps two Ford automobiles, but we believe the results have justified the efforts and the doctors and people have come to expect it.

The County Health Officer of Walker County is the City Health officer of each and every incorporated town, seven in number. However, in each town a local doctor has agreed to act as assistant city health officer. And so far the plan has operated nicely, though we are sure better results would be obtained if the assistant city health officers were on small salaries. These little towns, ranging from 500 to 3,500 in population have formed nuclei for the development of our entire work and a great deal of time and energy have been expended in them. We conducted education campaigns, endeavored to form civic leagues, hold clean-up campaigns, and thus create a sentiment for better conditions. Then gradually, as the time ripened we caused city ordinances to be passed and enforced. These towns are not yet perfect, in fact they are just getting in line, but a report made by the United States Public Health Service says, "the towns in Walker County are advanced examples of town sanitation." One of our main attacks has been directed against the open back, surface privy, usually the most conspicuous feature of a small town. In each of these towns we have passed ordinances requiring sanitary privies, where connection with the sewer cannot be made, and these closets are cleaned each week by the city, at the owners' expense. By a sanitary privy we mean one that has its vault practically screened against flies, has a metal receptacle for the catchment of excreta, and a flue or vent pipe, going from the vault to the top of the closet to take off disagreeable odors. You can imagine the fight we had to enforce these ordinances, but public sentiment was behind us and following a number of prosecutions the system is working fairly satisfactory in five of the seven towns, while the improvements in the other two towns have been so marked that we are gratified. Regular inspections of these towns are made, complaints investigated, and where prosecutions are unavoidable they are instituted by the County Health Officer. During the year 1915 thirty-two prosecutions were instituted.

In Walker County there are a great many mining and industrial camps, some thirty in number, and the co-operation given us by the operators of most of these industries has been most gratifying. Regardless of the financial depression which so greatly affected these corporations during the past two years, some of them have spent thousands of dollars in sanitating

their camps and are now almost models. For example, the Indian Head Cotton Mill village of Cordova. The village is supplied with water from the river; it passes through a modern filter plant, is then dosed with hypochlorite of lime and distributed to every section of the village. The houses are good and the premises kept clean and each is provided with the most satisfactory sanitary privy that I have ever seen in operation. This camp was scored 87% perfect by the Government Survey, while those left to nature's care were scored as low as 29%.

The County Health Officer is the Medical Inspector of all schools in Walker County, 125 in number. The magnitude of this undertaking can probably be appreciated when we remind you that an effort has been made to make a physical examination of the children attending, about 8,000 in number. This work has not yet been completed but before the end of this present year, every school will have been visited and classified as to its sanitary condition and each child physically examined. In classifying the sanitary condition of schools we grade them A, B, C, D, and E and publish the grades explaining that a school in class "E" is unfit for use as a school while class "A" is in excellent sanitary conditon.

During the past two years 5,947 children have been physically examined, of which number 32% were found suffering from physical defects other than decayed teeth. These defects included defective eyes, diseased tonsils, adenoids, defective ears, hookworm disease, and many other physical conditions that were sufficiently great to retard progress unless corrected. Whenever a defect was found the parent or guardian of the child was sent a card denoting the condition and advising correction. We are, of course, unable to estimate how many of these defects have been corrected, but certainly a number sufficiently great to justify the expense and effort of the work. For example, the Saragossa School was inspected in 1914 and 43 per cent of the children found defective; the same school inspected in 1915 and 17 per cent defective. We are convinced that these same physical defects, which might have been corrected, are responsible for a large percentage of our sickness, our insane, our criminals, and last but not least of our poverty that exists today.

We have made every effort to keep the County Health Officer from being considered a bacteriologist, first, because he was not, and second, because we thought such work could be better done by the State Department thus leaving the health officer to his many other duties. However, it has been necessary to do some laboratory work, such as grow cultures for diphtheria, make hookworm examinations and the like. For example, during 1915 the following work was done in our own laboratory:

Diphtheria cultures	35
Widals	55
Sputum tests	56
Stools	71
Autopsies	2

This work is done in our office in the main part of the County Court House, which we have endeavored to keep arranged as a health exhibit, using models, charts, maps, etc., in an effort to appeal to the public. Saturdays are set aside as our office days, and we usually have a great many visitors. We wrote from this office last year 948 official letters, and thousands of circular letters, and are now mailing to the mother of every baby for which a birth certificate is sent in, a little bulletin on the care of the baby.

As you have doubtless gleaned from the above, the activities of our county health department have been very largely educational. They had to be and will continue to be so. Education must precede legislation and in no reform is this more essential than in public health work. During the two years one hundred twenty-four public health lectures have been delivered in Walker County, most of which have been demonstrated with stereopticon slides. One hundred and forty-seven newspaper articles have been prepared and published; thousands upon thousands of health bulletins have been scattered over every section of the county, practically every one of the eight thousand homes in the county have been visited by a sanitarian and the story of disease prevention told. In this way we have endeavored to drive from the minds of the people the old idea that disease is sent upon them from above, or is caused by poisonous miasmata that

drift in the air. We have striven to teach them the simple truths of disease prevention: that fresh air is the cure and prevention for diseases of the lungs; that sanitation is the cure and prevention for diseases of the intestines, that the essential cause and cure for pellagra is a liberal nutritious diet; that infant mortality can be reduced to almost one-third its present rate by proper feeding and hygienic care; and that not only can lives be saved but that by disease prevention the efficiency of the living man can be increased.

In doing this work we have not been single handed. The United States Public Health Service sent us a corps of six men who with one man from the State Health Department made a complete sanitary survey of Walker County. These men were the ones who visited practically every home in the county and told the story of disease prevention. They not only accomplished a great deal by their own efforts but they accentuated and gave prestige to the work being done by the County Health Department. The Walker County Anti-Tuberculosis Association has given us a visiting nurse who is working under our direction. Nor can we close without stating that the medical profession has been the backbone of all our activities.

HISTORY OF PELLAGRA — CERTAIN SALIENT POINTS.*

By C. H. Lavinder, M.D.
United States Public Health Service, Ellis Island, New York.

Historical studies in disease possess importance. Through them we may profit by the accumulated observations and the experience of others, gain perhaps new angles of vision, and secure valuable mental perspective. The history of pellagra has been neglected by the American student. Many of the early articles on this disease are characterized by breadth of comprehension and sound judgment. Modernized, they would prove stimulating reading to the most up-to-date student.

Historically, the first description of pellagra was made by Gaspar Casal in Spain. His article is a good one. He gives an excellent description of the erythema and discusses with judgment the general symptomatology. Strange to say, he does not mention diarrhoea, giving as gastro-intestinal symptoms only weakness of the stomach, sore mouth and a foul tongue. The cause of pellagra he attributed to atmospheric conditions and poor food. Maize in itself he regarded as unimportant since the disease was restricted and the consumption of maize widespread. For treatment he recommended a judicious use of certain drugs, bathing and, above all, a good and nourishing diet.

Besides its historical interest Casal's paper, especially in comparison with other early papers, possesses wider significance and suggests the consideration of certain points.

The chronology of pellagra is suggestive. First described in northern Spain as *mal de la Rosa*, fifteen or twenty years later in northern Italy as *Alpine scurvy*. Soon afterwards in Milan as *pellagra*. A little later in France by another name—all these writers describing independently a new disease which, it is to be noted, is not rare but widespread. How like our experience in the United States! A disease, hitherto unknown, is suddenly described almost simultaneously in several states, not as a sporadic affection, but actually epidemic. And in Europe, as here, the disease first possessed great malignancy and gave a high mortality. This apparently sudden appearance, rapid spread and great intensity suggests an infectious process, but does not warrant the assumption.

The restricted geographic distribution of pellagra is peculiar. This is noted by many early writers, and is seen here where the disease is largely confined to the Southern states. Facts like this need explanation.

Contagion in pellagra was a burning question among the early writers, but by the middle of the nineteenth century the matter was regarded as definitely determined in the negative. It has been revived with us. With no desire to criticise, it seems unwise to adopt quarantine methods. In the absence of definite knowledge such methods perhaps do much harm and little good.

Finally there is the relation between diet and pellagra. Throughout all the

*Condensed paper read at the meeting of the National Association for the Study of Pellagra, Columbia, S. C., October 22, 1915.

literature of pellagra, both early and late, will be found the thought, in one form or another, that this disease is very closely associated with a poor diet, and especially a diet lacking in nitrogenous principles. Among all the complex and discordant things which surround this disease this is one outstanding *fact*. Its importance with us has not been sufficiently appreciated. The exact relation between food and pellagra is, however, not understood, and until that occurs we can not know what etiologic significance diet may possess. At present the most hopeful outlook for etiologic studies seems to be in approaching the disease from the dietetic side.

PELLAGRA.*

BY JOHN FLETCHER YARBROUGH, M.D.
Columbia, Ala.

It was my privilege in the spring of 1912 to call your attention to what I conceived to be the true etiology and treatment of pellagra with a report of four cases successfully treated. A few months since I again had the pleasure of calling your attention to this subject, reporting more than forty cases successfully treated. In this paper it is my purpose to go more into detail, hoping to convince you that the etiology and treatment of pellagra has been discovered.

Pellagra is simply an auto-intoxication, the result of a carbohydrate diet, in which there is practically no protein. This carbohydrate or alcoholic material, when taken into the stomach, is quickly converted by the normal heat of the body into what the distillers call "sour mash." The production of this sour mash three times daily for weeks and months finally so cripples metabolic activity as to allow this fermented material to be taken into the circulation without the necessary chemical change; the victim's metabolic function has been practically destroyed by eating alcohol, and the result is the varied and complex symptoms we call pellagra.

I believe the only germs associated with pellagra are those incidental or accidental to the normal fermentation of the carbohydrates or alcoholic material. With this hypothesis as a guide, it has been our privilege to successfully treat eighty-one (81) cases during the past four years. To save time and your patience I will report only four (4):

Case 1.—Mrs. F., white, married, age 26. Saw this patient first July 6, 1912. Gave history of pellagra for last four years. She was vomiting every half hour. Bowels discharging pus and blood almost continuously. The oral and vaginal mucous membranes were in a highly inflamed, irritable, red condition, and the dermatitis, which extended up to and included the elbows and the dorsal surfaces of both feet and toes, was very characteristic. Her condition was very grave. Temperature 100, pulse 140, and respiration 30. Under treatment she began to improve at once and was dismissed, well, August 10th.

Case 2.—Mrs. J., white, married, age 65. Was first seen August 12, 1912. Gave history of having had pellagra three years. Physical examination showed the red, irritable tongue and buccal mucous membranes; acute dermatitis was present on the back of both hands, also about the elbows. Confusion of mind very marked. Examination of stool showed pus and blood. The patient began to improve from the third day and was dismissed, well, September 15th, and is now in fine health.

Case 3.—Mrs. T., white, married, age 26. Was first seen August 12, 1912. Gave history of havbeen ill three or four weeks with slight fever, headache, nausea, vomiting, insomnia, sore throat and burning in the stomach. The upper extremities and neck were affected by a severe dermatitis, which she said had existed for several days, caused by sunburn. The dermatitis extended above the elbows, corresponding precisely to the parts uncovered by the dress she wore. Her tongue was so irritated, red and inflamed she could hardly protrude it. The buccal mucous membranes were in a similar condition with ulcerated lesions on the lower lip and constant salivation was present. Continued nausea with little vomiting. Stomach much distressed with severe burning. No case could be more typical of severe pellagra. She recovered in less than four weeks.

Case 4.—Mr. S. J., white, age 47. Admitted September 15, 1915. Gave history of having had pellagra twelve years. Weight when admitted 112 pounds. Tongue and buccal cavity extremely pellagrous; tongue protruded with difficulty. Salivation present; evidence of former dermatitis marked. Severe gastro-intestinal burning; burning sensation on hands, forearms and feet. Marked

*Read before Houston County (Alabama) Medical Society January 4, 1916.

nephritis; anaemic murmur; dyspnea at times alarming; diarrhoea of great severity—twenty to thirty pea-soup stools in twenty-four hours; proctitis; articular rheumatism of both ankles; sense of taste lost; sense of sight almost destroyed; marked anemia; insomnia, with great confusion of ideas. On the third day the diarrhoea had entirely disappeared. At the end of the first week the salivation, insomnia and confusion of ideas showed marked improvement. The third week showed the rheumatism and the previously impaired senses of taste and vision almost wholly relieved. He was dismissed, well, November 1st, weight 138 pounds. Now (January 1st) he weighs 170 pounds. No case could be more typical of chronic pellagra in its last stage.

The *symptoms* of pellagra may be described under nine heads: Oral, gastric, intestinal, gastro-intestinal, genital, dermal, nephritic, cardiac and mental. This may not be a scientific classification, but is clinically convenient. These symptoms may be briefly described as follows:

Oral: The tongue is irritable, red, with a shining glazed appearance. It is protruded with difficulty, loses its normal shape, and becomes an inert flabby mass. Fissures often appear in the corners of the mouth and dirty, ragged ulcers under the tongue. Profuse salivation is often present.

Gastric: This symptom takes the form of a simple gastritis, the stomach refusing all food and medicine. We have at times associated with this condition more or less severe chest pains, due very probably to an oesophagitis.

Intestinal: Diarrhoea of very great severity is often present, usually without pain; stools show pus and blood. Again, nothing but pus. They sometime assume the thin pea-soup discharge characteristic of typhoid.

Gastro-intestinal: All of the symptoms described under the two preceding heads are here present.

Genital: These symptoms present themselves in the female in the form of an acute vaginitis with a thin, acrid discharge excoriating the surrounding parts. Proctitis is noted in the male with a similar discharge.

Dermal: The dermatitis of pellagra is so characteristic that when once seen can not be confused with any other lesion of the skin. It is usually found on the dorsal surface of the hands, forearms and feet, but is occasionally found on the face, neck and body. When on the body it usually takes the form of large brown spots; very rarely it covers the entire body. In severe cases a peculiar doughy condition of the skin is present, especially over the abdomen. When a fold is caught between the fingers and pressed tightly it regains its normal position very slowly. Rarely this doughy condition is found to cover the entire body. Many errors in diagnosis are made because of the absence of the dermatitis. It is indeed a rare case in which all the symptoms are present. Then why should we demand the presence of the dermatitis before a diagnosis of pellagra is made? Several of our cases showed no evidence of dermatitis and denied ever having had any such symptoms, yet there was the pellagrous mouth, diarrhoea, mental derangement: in fact, all the symptoms except the dermatitis. They were put on treatment and promptly recovered.

Cardiac: Several cases in which the nephritic symptoms predominated exhibited the anemic murmur characteristic of hookworm disease.

Mental symptoms: A large number of my cases have shown a decided mental derangement, such as melancholia, confused ideas, extreme irritability, hallucinations.

TREATMENT.—The treatment of pellagra may be considered under two heads, dietetic and medicinal:

Diet: Too much stress can not be placed upon the necessity of immediately eliminating all carbohydrate or alcoholic material from the diet. The proteids to be substituted should be selected with the greatest care, because upon this decision largely depends the momentous issue of life or death. So long as there is nausea, vomiting or diarrhoea the diet should be absolutely restricted to milk, meat broth and fresh fruit juices, preferably orange. After these symptoms have subsided the whole list of proteids may be allowed ad libitum, fresh fruits and vegetables to be preferred.

Medicinal: Contrary to the opinion of physicians in whom great confidence may be placed, diet alone is not sufficient to bring relief to these sufferers. A mild case of recent origin may in time be relieved in this way. Many of our patients

would have gone promptly to their reward if diet had been the only means employed.

The Gibraltar on which we mainly rely is nitric acid, twenty to thirty drops of the dilute acid in a glass of water, as nearly on an empty stomach as possible, or one hour before meals. Nitric acid is employed for two reasons: First, we find the saliva, stools and urine to be extremely acid. To render this condition alkaline is our first and most imperative duty. No drug is more dependable for this purpose than is nitric acid. On the administration of this drug, if there is no gastric ulceration, the nausea and vomiting not infrequently subside after the first or second dose. The diarrhoea disappears in from three to four days if there is no ulcerative ileo-colitis. The salivation will have disappeared in less than a week. Second: Probably the most important reason why this drug should be employed is the fact that the blood is found to be acid. The hemaglobin of an acid blood carries but little if any oxygen, hence the acute progressive anemia that quickly follows an attack of pellagra. The administration of nitric acid renders the blood quickly and positively alkaline. At once it assumes its normal function of carrying oxygen and the anemia disappears as if by magic.

The simple administration of nitric acid and the substitution of the proteids for the carbohydrates is not all that is necessary in the successful treatment of pellagra. Close personal attention to details is of the utmost importance. Complications must be met as they arise, by means best suited to each individual case. From my experience the conclusion is drawn that pellagra will never be successfully treated by the general practititoner because he can not have the absolute dietetic control of the patient that is necessary for the successful treatment of the disease. I believe the only way pellagra will ever be eradicated is for each state to establishh a sanatorium (or sanatoria if necessary) for the purpose of education as well as treatment, patiently teaching day by day the true origin of pellagra that they may learn to balance the proteins and carbohydrates, thereby gaining immunity against future attacks; in this manner each patient becoming a teacher for his fellows. By this method the disease may finally be eradicated.

In the study of pellagra during the past four years other facts have been brought to light which, when understood, will, I believe, revolutionize the treatment of many of the commoner forms of disease. We know that all organic functional activity produces many by-products, the principal one of which is acid. We also know that the liver is the great neutralizer of these by-products. Now when a normal balanced ration is consumed the liver is well able to take care of these by-products, but when a carbohydrate or aleoholic ration is almost exclusively consumed we find these by-products enormously increased. Under this extra burden the liver becomes unable to perform its proper function and an accumulation of these by-product follow. The result is a crippled metabolic activity, as well as a derangement of all of the normal organic functions of the body. The result is not pellagra alone, but many other allied forms of disease. Leucorrhea, vaginitis (other than gonorrheal), acne, eczema, hyperchlorhydria, or acid dyspepsia, muscular and articular rheumatism (other than specifiic or gonorrheal), nephritis, especially of the interstitial variety, are all found associated with pellagra.

Under the treatment outlined above they all make a rapid and satisfactory recovery.

I believe that this paper contains the true etiology and treatment of pellagra, as well as many other allied forms of disease. Allow me to call your serious attention to what may be termed the carbohydrate diathesis, evidently the common parent of them all. A vast field for thought as yet but little explored.

I wish to acknowledge my indebtedness to Dr. W. E. Deeks for material aid in the study of pellagra.

SURGERY, GYNECOLOGY, OBSTETRICS AND GENITO-URINARY DISEASES

THE CONTROL OF PERSISTENT UTERINE BLEEDING COMPLICATING THE MENOPAUSE FIBROMYOMATA AND CARCINOMA OF UTERUS BY RADIUM.*

By C. Jeff Miller, M.D.
New Orleans, La.

So many conflicting statements have been published regarding the radioactive qualities of radium that even at this date no definite conclusions as to its exact status can be drawn from the literature. Its virtues have been extolled by eminent authorities and equally eminent men have unqualifiedly condemned it. There should be some middle ground upon which both those favoring it and those denouncing it could agree. This can only be accomplished by making accurate records of the clinical results.

It has been used long enough to prove that it has a distinctive place as a therapeutic agent, and I desire to relate my experience with it in the treatment of uterine hemorrhage.

Uterine hemorrhage, of course, is only a symptom and may arise from numerous causes, both constitutional and local. The term as used here will apply especially to hemorrhage due to local causes, e. g., disturbed ovarian function, myometrial degeneration, fibrosis, fibromyomata, and carcinoma of the uterus.

The most striking result of radium application is the promptness and certainty of its action on the blood vessels. It is probable that most of the changes wrought in growths by radiation may be due to the marked avascularity produced. Its distinct action on cell structure, however, proves that the vascular changes can not explain all the phenomena following its use.

Wickham first called attention to the marked obliterative end—arteritis caused by exposures to radium which prompted its use in vascular naevi. Abbe, after noting its effect on naevi, concluded that it might be effective in controlling hemorrhage due to fibroids and used it first in 1905. This was the first case so far as is known of its use in such conditions. Since then numerous observers have treated cases with most gratifying results. In this country Kelly and Burnam have reported a large series of cases, most of which have been under observation long enough to prove that the results were permanent.

The mode of action of radium and X-rays in the control of uterine hemorrhage is still to some extent a matter of theory. The ideal result in uterine hemorrhage may be due in a large measure to the fact that a stimulus from the ovary controls the phenomena attending menstruation and that the ovary is quite sensitive to radiation. The ovary and testicle are more sensitive to radiation than any other organs of the body, and as the maturing cells are promptly destroyed, menstruation is correspondingly affected, or suppressed. Kelly and Burnam believe that radium possesses a specific and direct effect on fibroids and that results can be obtained independently of any action on the ovaries.

There must be truth in the claim, for fibroids have disappeared under its use without checking menstruation, and a quantity of radium too small to radiate the area between the uterine cavity and ovary has been known to check hemorrhage.

There are few surgeons who have not performed one or many hysterectomies for the excessive or continuous hemorrhage that occurs in women between 40 and 50 years of age and usually attributed to the approaching menopause. These women have usually borne several children, although some are nulliparae. The condition is first a severe menorrhagia, often a metrorrhagia, and the patient usually presents a picture of anemia of varying severity. The uterus is usually large and hard, but may be small and

*Read in Section on Surgery, Southern Medical Association, Ninth Annual Meeting, Dallas, Texas, Nov. 8-11, 1915.

flabby. Connective tissue changes are prominent, and, as a rule, comprise one-half of the uterine wall. The endometrium is usually thickened and contains numerous glands, but may be abnormally thin.

These cases present no evidence of malignancy and consult the surgeon because of the hemorrhage, extreme nervousness and marked debility. They are usually curetted, packed, given all of the known styptics, and then advised to have hysterectomy performed.

Radium is the treatment par excellence for these cases. During the past eighteen months I have tested its value in ten severe cases of uterine hemorrhage belonging to the class mentioned above. The bleeding was promptly checked by a single application, the menstrual periods were immediately suppressed, and they suffered no inconvenience with the exception of the menopausal symptoms which appear in about one-half of the cases.

In addition to the cases over forty years of age, who presented nothing other than the enlarged uterus and were classified as chronic metritis, fibrosis, hyperplasia, etc., I have applied radium in five women between 25 and 36 years of age. One of these, a lady of 25 years, gave a history of severe menorrhagia for eight years, which finally changed to a metrorrhagia that lasted for months at a time. She had been curetted five times, one ovary had been removed for cystic disease, and in addition she had undergone a full course of X-ray treatment. One application of 77.4 milligrams of radium element gave complete relief.

Two other cases of obstinate bleeding, who had failed to obtain relief after repeated curettage and resection of cystic ovaries, were relieved by a single application.

In another case, metrorrhagia developed several months after double salpingo oophorectomy and was relieved by a short exposure. This was an aggravated case and the surgeon had tried every method of controlling the bleeding and was considering hysterectomy. The result in this instance shows that the effect of the radium was due to changes induced in the uterus since the ovaries had been removed prior to the treatment.

The cases related here are not selected from a series that would also show a number of failures. I have included ten consecutive cases that have reported their present condition within the past two weeks, eliminating all who have not been questioned recently. Most of them were referred to me for some radical surgical measure after other treatment had failed. They were relieved after only a few hours in bed, and in only two instances was it necessary to administer an anesthetic.

I have not used radium to control menorrhagia, occasionally met with in very young girls. I did not feel that I had sufficient experience in its use to recommend it, because its effects could not be sufficiently controlled to avoid producing amenorrhea. I would not hesitate now to use it in severe cases, since Kelly and Burnam have shown that its careful use will reduce the menstrual flow without suppressing it. Of course, it is not necessary to add that it should be used only in aggravated cases, after other measures have failed.

Burnam states that it is only the occasional case that has to be treated to complete amenorrhea to secure perfect restoration to health.

Hemorrhage associated with fibroid tumors of the uterus is as readily controlled as in the above mentioned conditions.

In ten cases of fibroids complicated by excessive bleeding, a single application promptly stopped the flow, with one exception. In this one exception a second application produced the desired result.

Three of these cases could not have undergone hysterectomy without serious risk owing to the extreme anemia, and in one instance a cardiac lesion.

One case showed a hemoglobin estimate of 16% with red cells slightly above 2,000,000.

Three others refused operation because the growths were small and gave no inconvenience other than the bleeding. There has been a decided decrease in the size of the tumor in every case. I can not yet report the complete disappearance of a fibroid, although other observers have done so.

These records are not presented with the idea of attempting to prove that radium or radiation is to succeed surgery in the treatment of fibromyomata, but rather

to show that surgery has in radium a valuable adjunct that may relieve many aggravated cases in which operation is contraindicated for various reasons and save the necessity of unsexing many young women simply to control an annoying symptom.

The old dictum that every fibroid should be removed as soon as functions are disturbed is as debatable as the statement that all fibroids should be treated by radiation.

The mortality accompanying the removal of uncomplicated fibroids has been reduced to such a percentage that the operation is safe when performed by experienced surgeons; but, unfortunately, complications such as cardiac, renal and pulmonary lesions, diabetes and anemia, are quite frequent. No one can question the value of radium when such complications exist.

Fibroid tumors are not malignant growths and may not cause trouble other than the symptoms, and if these symptoms can be relieved entirely by radium, or be checked until operation can be safely performed, its value is fully established. If radium fails, the risk of operation will not have been increased.

The chief argument usually urged against the use of radium in fibroids is the liability of overlooking malignancy. This is a valid objection, but certainly not sufficient to convince one that all cases should be operated upon because a certain small percentage become malignant. A careful diagnostician, with the aid of a competent pathologist, should be able to reduce such a risk to a minimum.

The value of radium in the treatment of fibroids associated with anemia, or other conditions in which operation is contraindicated, can no longer be questioned. The bleeding can be practically always controlled and the tumor in 90% of cases reduced in size by a single application of radium.

The chief advantage of radium over the X-ray is the time saved for the patient. A single application will produce the same result that could only be obtained after several X-ray exposures.

The treatment of carcinoma of the uterus hardly comes within the scope of this discussion further than to mention its effects when used to control hemorrhage. Bleeding and sepsis are the commonest characteristics of advanced uterine cancer; the complications that wear the patient down rapidly and make life a burden to her and to her attendants. I have used radium in a fairly large series of inoperable cases and failed in only one instance to promptly check all bleeding, including the menses. I have seen the parametria clear up, the bladder wall infiltration disappear, the sloughing crater entirely heal over, the pain subside and all discharge cease in five hopelessly advanced cases of cancer of the cervix. Two of the worst cases are apparently free from disease nineteen months after the treatment.

In many cases the results have been negligible other than controlling the hemorrhage and retarding the growth temporarily. As a rule, pain is reduced or completely relieved. Three cases who had required morphine regularly were able to abandon its use soon after treatment was begun.

Practically all of the cases showed marked general improvement, probably because the bleeding was arrested and the septic condition altered.

We must be extremely careful in our statements regarding the virtues of so-called cancer cures. The only treatment so far known that offers a chance for a permanent cure is early removal by surgery. Surgery has earned this distinction and no idea should be allowed in the minds of the public that any other remedy promises as much as operation in the early stage of the disease.

We must also be careful lest surgery be brought into disrepute by advising operation in hopeless cases. We can not estimate the number of people who decline operation believing that surgery is useless, because some friend or acquaintance submitted to the knife and the growth returned within a few weeks. This is often the surgeon's fault, because he has operated after the time has passed when surgical treatment offers the slightest hope.

I have accomplished more with the radium treatment in advanced cancer of the cervix than with any other agent I have so far used.

Aside from the question of the permanent cure of cancer, which shall not be

discussed here, there can be no doubt as to the value of radium in inoperable cancer of the uterus. It has proved a boon to patients with recurrent and inoperable cancer, and I believe it will be eventually shown that the percentage of permanent cures after radical operation will be increased by using radium applications in conjunction with surgery. I have converted inoperable into operable cases and destroyed rapidly-developing masses in the vaginal vault following hysterectomy. In one case the mass disappeared in two weeks and has not reappeared six months after a single application.

My results have been sufficient to convince me that radium is a valuable adjunct to surgery in the treatment of cancer of the uterus. I would not advise it as the sole treatment in operable processes, but recommend radiation combined with operation. In inoperable cases it is the best treatment known at present, and when better understood and properly controlled, it may prove to have even a wider field of usefulness than has been so far accorded it.

DISCUSSION.

Dr. E. C. Samuel, New Orleans, La.—I am only supposed to open this discussion in the defense of deep therapy with the X-ray.

Until about four years ago X-ray treatment, from the post-operative standpoint, amounted to practically nothing. With the advent of the Gaus apparatus and technique, worked out by the Frieburg school, and the Cooledge tube from the General Electric laboratories, deep therapy has taken its place suddenly on the horizon of medicine.

We do not claim to do everything with deep therapy. There are only certain cases and conditions that can be benefited by deep radiation. Dr. Miller just speaks of a young lady twenty-five years of age who underwent a thorough series of X-ray treatment, according to the deep method. I am the one who gave this series of treatments, so called. I was absolutely unable to control the young lady in any way whatsoever. When I asked her to return for a second series of treatments on a certain day, I would possibly see her two or three weeks after the date set for the treatment, which has happened in two or three other cases in which we have failed completely.

This is only recommended to check hemorrhages in women who have passed the age of thirty-five to forty. The closer we get to the period of the menopause, the more effective such deep treatment. The younger the cases are the less our chances of permanent cure.

In carcinoma of the uterus the bleeding is suddenly checked in the same way as radium, and a junction of the two—radium and deep therapy—in malignancy of the uterus, certainly has had a wonderful place. I have had cases with Dr. Miller, and the cases have turned out to the satisfaction of both of us—particularly one patient about sixty miles below the city, mother of a doctor, who had a carcinoma of the uterus removed by Dr. Miller and deep treatment used. She was sent to me with pain and metastasis in the breast. Deep radiations were used with cross-fire method—that is, used exclusively in this deep treatment.

Up to four months ago, when I had this last report, the patient was absolutely free from pain and symptoms. Possibly Dr. Miller has heard more recently in regard to this and could tell us more about it.

Dr. Miller has had a report two weeks ago, which I hope he will tell us about.

I have had cases with Dr. Kohlmann and other men in New Orleans of deep therapy. Some cases we have had very good results in, and in other cases the result is absolutely nil.

Dr. John T. Moore, Houston, Texas.—I desire to add just one case to the paper under discussion. About three months ago a sister of charity, who is a teacher, presented herself with a haemoglobin of 25% and a fibroid about the size of my two fists. She declined to consider the question of operative treatment. I suggested to her that she undergo deep treatment by the X-ray with the Cooledge tube, according to the method just referred to of Kroenig and Gauss of Frieburg. She was given twelve treatments altogether, mapping off the tumor into four parts, taking a larger part than Gauss usually does. After the first eight treatments the hemorrhage ceased practically altogether and she began to improve under the administration of iron, and she got so much better that she did not like to take the other treatments, but I insisted upon it so strongly that she consented and took the four other treatments. After these her gain was very rapid and she is now back at her work, and the test of her haemoglobin one month later showed 35% and, to all intents and purposes, this woman is well.

This sister was thirty-eight years of age, and of course the question of whether the ordinary menopause is established is not an important one here.

She has continued to improve and I am sure she must now have a haemoglobin of 70%.

Dr. W. Kohlmann, New Orleans, La.—I was present in London a few years ago at the International Congress, when this question of treatment of cancer of the uterus was discussed and Kroenig reported his results. I bring that up because shortly after that a paper was to be read by Wertheim, and it was wonderful to see how every one was interested in radium and the X-ray. Nobody listened to the question of operation, and every one left with the idea that we had a cure for cancer, and notwithstanding Czerny had much radium in his possession, we had no results with radium. I mention that to show that we should not leave here thinking that we have something very good, what promises absolute cure.

I have used X-ray in some cases, and I believe with some results. Cases of bleeding have no

doubt been benefited. I think the changes produced by X-ray must be the same as by radium. I think it is due to the effect of the ray. I do not see, though, how a single application of radium in a short time should produce changes of that kind, so that the uterus would look different from what it is when excised after operation.

One experience especially seemed to prove it—a young woman of thirty-nine was X-rayed for quite a long time. X-ray had no influence on it and I was forced to remove the uterus. Notwithstanding the X-ray treatment, the uterus showed the same changes reported by the bacteriologist as in any other uterus which was removed for bleeding, and it was my impression since that that the sole influence of the radium is merely on the ovary, and that is due to the hypersecretion which produces the intense bleeding, and the internal treatment will have a decided influence.

This idea was proposed by Schickelen, of Strasburg, some two years ago in a very interesting paper. I was induced to try it and in the last few years have treated a number of cases with good results. There is no doubt, as far as I have seen (and I have used X-ray especially and my results have been good), the bleeding diminished, but, as I believe, not on account of the influence on the uterus itself, but the influence on the ovary by changing the internal secretion.

Dr. E. H. Skinner, Kansas City, Mo.—I have had more or less experience with the treatment of these pelvic conditions by means of the deep Roentgen therapy and feel a great deal of confidence in this method. European Roentgenologists did this same work many years ago which is now being reported upon in America, but they had to use so many tubes in doing their work in order to have the penetrating ray that few men were able to duplicate their work. Since the introduction of the new Cooledge tube, by which we can control the penetration, we can, by the addition of certain filters, get such an enormous amount of X-ray into the pelvis by the cross-fire method that these results in pelvic conditions are being reproduced all over the country. We do not repeat our treatment oftener than every three weeks. By means of the deep Roentgen therapy with the Cooledge tube we can show you a most startling array of results. We do not claim them as cures yet. One must wait a period of five to eight years before reporting them as cures; but at present we claim that they are good symptomatic results.

Dr. C. Jeff Miller Closes.—I wish to thank the gentlemen who have so generously discussed my paper and to mention in closing two or three points regarding the technique of radium applications.

In regard to the X-ray, I do not wish the impression to go forth that I am favoring the radium over the X-ray. I know very little about the practical results of the X-ray and discuss it only theoretically. I saw the use of the X-ray in Prof. Kroenig's clinic at Frieburg, and also saw various post mortem specimens prepared by Prof. Aschoff, who was studying the results of intensive X-ray applications. The treatment of fibroids, malignant conditions and hyperplasia of the uterus with X-ray requires a special apparatus, such as the Gauss outfit or the Cooledge tube. This should be thoroughly emphasized, because I believe great harm is being done by the use of the ordinary X-ray outfit in these cases. I saw four large tubes playing upon an abdomen in Kroenig's clinic, which was continued for probably four hours. The average X-ray tube would produce the most serious consequences if used for probably a third of this time. So I think the X-ray workers should call the attention of the profession to the dangers of ordinary X-ray technique as a therapeutic measure.

The effect of radium on the uterus has been thoroughly worked out upon uteri removed some time after the applications. These specimens show marked connective tissue changes and blocking up of the blood vessels of the entire area. So the effect is not altogether due to changes produced in the ovary.

In regard to the fibroids that do not decrease or change after radium application, this might be explained in several ways. It has been shown that certain fibroids will not decrease in size, and, as Burnam has shown, some of these may contain calcareous deposits and others do not react to radium. This is a phenomena not yet explained.

I usually apply about 50 m. g. of the pure radium element, well screened, to the cavity of the uterus for about 12 to 18 hours. This is usually sufficient to control the hemorrhages of the menopause and the bleeding of fibroids. Drs. Kelly and Burnam use larger amounts for a shorter period, believing that the more intense the dose the better the effect.

NEGLECTED APPENDICITIS — ITS HIGH MORTALITY A DIAGNOSTIC AND THERAPEUTIC RESPONSIBILITY.*

By F. G. DuBose, M.D., F.A.C.S.
Selma, Ala.

Appendicitis should rarely, if ever, be the cause of death. Immediate diagnosis and proximate operation would put the cipher in the mortuary column. If the occurrence of a preventable disease is a censure on hygienic law, then the tragedy of an avoidable death is a crime.

Operations done on acute appendicitis within twenty-four hours after the onset of the initial symptoms give a mortality greatly less than 1%. It is, therefore, obvious that the present death rate of approximately 8% is due to delayed diagnosis, errors in early treatment and deferred operation. A responsibility of more than 7% of needless deaths from

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one disease deserves the most serious consideration of the medical profession.

Progressive peritonitis in 75% of all cases is due to appendicitis, the remaining 25% arising from all other causes.

An insurance company in 1914 paid twenty death claims for appendicitis out of a total of 872 for all other diseases; ninth in numerical order and causing 2.2% of all deaths, suicides and accidents excepted. This tabulation is taken from among those selected for physical well being, representing as a class intelligence and efficiency.

Detailed investigation of the fatal cases has demonstrated that the advanced stage the disease had reached before it was given surgical treatment was the one and only cause of the high mortality in acute appendicitis.

Immediate diagnosis absolves the attending physician from culpability, for it is manifest that no competent medical man of this generation would fail to advise operation at once, or make the mistake of administering a purgative. The only fatal cases, then, are those wherein the physician is called late—that is, after the first thirty-six to forty-eight hours of the disease; for such as these the public needs more education in the seriousness of the home treatment of bellyache and the fatal error of not calling in early the doctor.

PATHOLOGY.

Stanton reports the results of his investigations of the gross pathology at the time of operation of over 1,500 cases, and of the microscopic findings in over 500 acutely inflamed appendices removed during the first ten days after onset of attack. He demonstrates that the so-called varieties are merely different stages or degrees of inflammation. The following gross and microscopical appearances of the inflamed appendix observed by him are given for each day during the first week:

First Day.—"Obstruction of lumen with complete distension distal to obstruction. Evidences of beginning gangrene; diffuse polynuclear leukocytic infiltration; focal areas of hemorrhage and necrosis involving all coats, with more or less extensive destruction of mucosa; fibrinous or fibrino-purulent exudate on peritoneal surface. Serous exudates were found only towards the end of the first day, and in no cases except those given cathartics soon after onset of symptoms."

Second Day.—"Increase in extent and severity of pathological lesions found on first day. Beginning peritoneal involvment. If it is going to occur at all, gross perforation of the appendix itself, with or without gangrene, usually takes place before the end of the second day."

Third Day.—"Maximum of destructive process in appendix reached. Beginning of nature's efforts at repair, as shown by appearance of fibroblasts in all sections."

Fourth Day.—"Increased evidences of repair. Complete necrosis of the gangrenous areas."

Fifth, Sixth and Seventh Days.—"Concerned in process of repair, being almost completed by the end of the seventh day, except in the more extensive cases."

Too great stress can not be given to two of his conclusions resulting from this exhaustive analysis.

1. "That catarrhal appendicitis as a pathological entity does not exist; subacute appendicitis does occur; only three or four in the series showed an acute lesion grafted upon a subacute process."

2. "That bacteriological perforation occurs during the first few hours of the attack, irrespective of gross perforation or gangrene."

"Purgation spells perforation." Moynihan's sequence is *"pain, purgative, perforation."* He states that "perforation does not seem to occur if no aperient is given and if absolute starvation is adopted from the first." Further, that "acute general spreading peritonitis is due to the treatment by purgatives; it is a therapeutic peritonitis." In this connection paraphrasing Kipling's "Female of the Species," Deaver says: "The purgative is more deadly than the scalpel."

SYMTOMATOLOGY.

Sudden onset, nausea, severe abdominal pain, characterized by remissions of intensity, suffered most in epigastrium, around umbilicus, in either iliac fossa, and if the appendix is retrocecal maximum point of pain is in right lumbar region. Abdominal tenderness, on palpation or pressure, greatest over location of appendix, and when made there produces either nausea or referred pain in epigastrium. Broad pressure over sigmoid and descending colon by forcing gas into

cecum cause pain at McBurney's point. Pain is not relieved after emptying stomach and large bowel. There is constipation as a rule, invariably absence of diarrhoea. Muscular rigidity of varying degree, in right rectus, or over underlying appendix. Temperature, normal or subnormal in the beginning, elevated several hours after onset. Pulse slower in rate, becoming quicker after inflammation is well advanced. The differential diagnosis in the presence of this symptom-complex lies not between appendicitis and flatulent colic, or any of the dietetic, gastric or bowel disorders, but between appendicitis and one of the several, though less frequent, abdominal diseases, generally designated as the acute surgical abdomen, in the initiation of its first expression.

There is no difference of opinion among surgeons concerning the necessity of immediate operation early in acute appendicitis. When cases are seen during the surgical danger period, which is from the third to the sixth days, inclusive, after the onset, the conception of treatment has wide variations. The dictum "Operate as soon as diagnosis is made" is not now universally accepted; this change came on account of the notoriously poorer results of operations done during the "danger period" as compared with those performed earlier or later in the course of the disease, and from the teachings of Ochsner, who demonstrated the fact that the majority of these severe cases, given a rational method of treatment, could be tided over the unfavorable surgical stage and subsequently safely stand operation.

In deciding between immediate and deferred operation, it remains largely a matter of the surgeon's personal judgment—and he is wisest who is not the follower of any one set method, but adopts that plan which seems best suited to the individual case. It should constantly be borne in mind that the operative technique and the time of its performance is but one of three factors influencing favorably or adversely the termination of these cases. The treatment administered before the surgeon is called is all-important, and that given after the operation very momentous in its influence.

WHAT SHOULD BE DONE IF DELAYED OPERATION IS UNAVOIDABLE.

Empty the stomach and keep it empty. If vomiting is ineffectual use the stomach tube. After siphonage allow nothing else to be taken into the stomach, not even water. This will relieve nausea and reduce peristalsis.

Unload the large bowel by enemata or rectal flushings. Added comfort is secured by the elimination of gas and feces, and the way is prepared for the use of proctoclysis or clysters. These two measures are both diagnostic as well as therapeutic, for by the time the stomach and lower bowel are emptied, if the nausea, pain or colic is not relieved, it is not the result of acute indigestion, but of an acute abdominal lesion.

Morphine hypodermatically to relieve pain, lessen peristalsis, diminish shock, retard absorption, limit tissue waste, and to favor the formation of protective peritoneal adhesions.

Put patient in Fowler's position and begin the use of proctoclysis or clysters of either tap water or preferably of a concentration of 15% glucose, 1% sodium bicarbonate, and .5 of 1% of sodium chloride.

Transport to hospital as soon as possible.

WHAT SHOULD NOT BE DONE IN UNAVOIDABLE OPERATIVE DELAY.

Never administer purgatives! Aperients increase peristalsis that every conservative force of nature is attempting to stop; they prevent adhesions and thereby cause more or less extensive soiling of the peritoneum from leaking intestinal contents in perforation or escaping bacteria in inflammation. It is certain that the preliminary purgative never tided over the immediate necessity of operation in acute appendicitis and equally true that its performance is rendered more imperative and less safe by aperient therapy. Witness the statistics of Deaver in one year's work; of those purged only 1.5% escaped perforation, gangrene or periappendicular abscess; and of those to whom purgatives had been given 97.5% had the most extreme types of appendiceal disease.

Nourishment by the mouth increases peristalsis; if retained, will add factors of distress and danger out of proportion

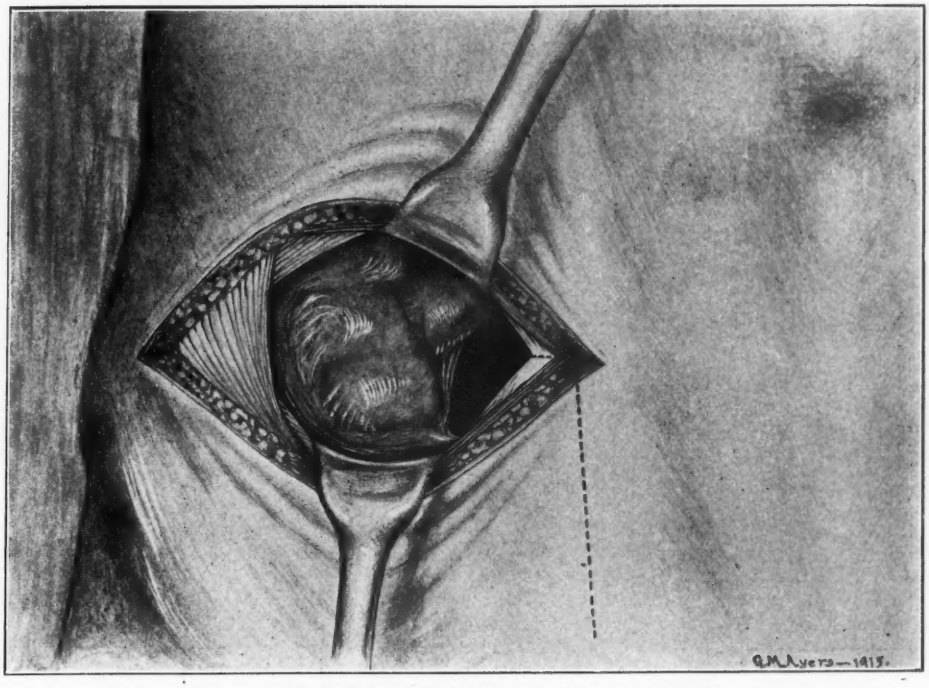

Fig. 1.—Transverse Skin Incision Modified McBurney.

in harmfulness to the nutritive benefits derived from its questionable assimilation.

To withhold the administration of morphine for fear of masking symptoms is a mistake, for it is the only drug of any benefit to the patient in assisting nature during the five-day danger period. It should be given in doses sufficiently large and at intervals repeated to maintain its physiological and therapeutic effect. It will be shown in the indications for or against operation that morphine does not mask the signs or symptoms which are determinative.

WHAT SHOULD BE DONE IN NEGLECTED CASES, THOSE FIRST ATTENDED AS LATE AS FORTY-EIGHT HOURS AFTER ONSET.

These are usually the abscessed, perforated or complicated by a diffuse or spreading peritonitis, giving an average surgical mortality of 12.5% from operations done after the first twenty-four hours from initial symptom and before the end of the seventh day following onset.

IMMEDIATE OPERATION IS IMPERATIVE.

1. In the presence of progressive exaggeration of all unfavorable symptoms following the rational starvation-rest preoperative treatment, the Ochsner method.

2. On the occurrence of sudden relief of pain, accompanied by subjective sense of improvement with a quickening of the pulse rate, indicating the rupture of a localized abscess or thrombosis, gangrene or perforation of appendix.

3. Evidence of localization of inflammatory process by adhesions when a circumscribed area of swelling appears in right abdomen.

4. A sudden fall in a previously high leukocyte count, or a gradually decreasing leukocytosis with steady increase in the polymorphears, indicating a failing resistance.

5. When more than one week has elapsed since the beginning of the appendicitis, for by this time the acute inflammatory reaction is passed and the blood has established to a high degree protective powers.

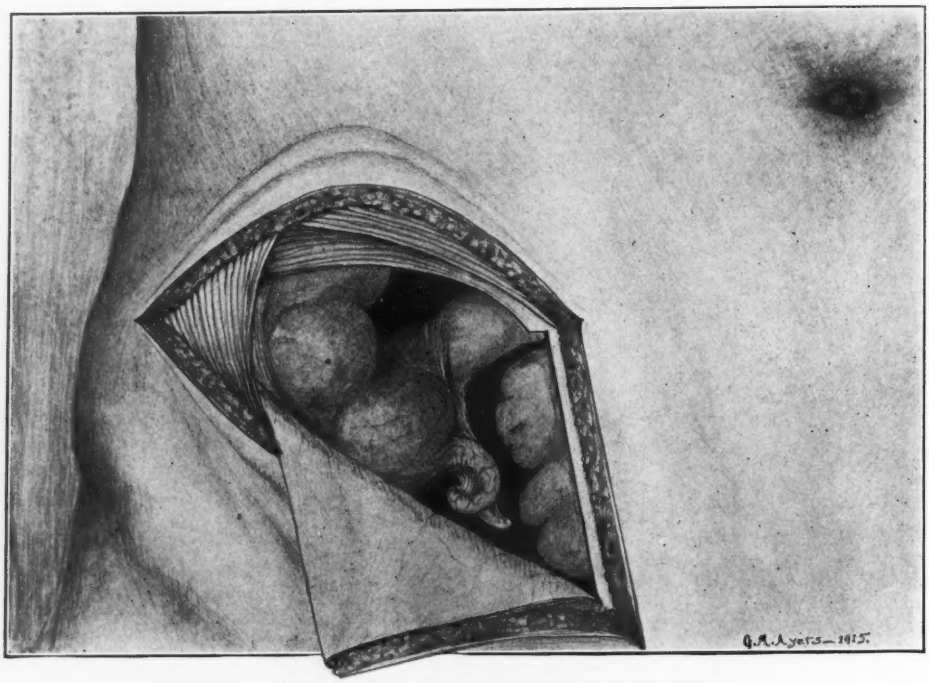

Fig. 2.—Showing Flap Formed by Incision Along Rectus.

DEFER OPERATION.

1. From the third to the seventh day after onset, when the fury of the appendicitis is at its height, giving the Ochsner method a chance to have effect, evidenced by improvement of symptoms; in the absence of an exigency the operation should be withheld till the acute general symptoms have subsided.

2. Blood examination showing a high polymorphear count without an accompanying leucocytosis, for this is found in intense infections in subjects with little or no resistance and in one so overwhelmed that a fatal issue is to be expected under any treatment.

BENEFITS FOLLOWING DELAY.

1. The sympathetic nervous system is given a chance to recover from the shock received and to re-establish in a measure its equilibrium.

2. The vascular system is afforded time to form antibodies and increase its army of leucocytes to battle with the infection.

3. A necessary period of time is permitted the peritoneum to throw out its limiting wall of adhesions.

DANGER IN POSTPONING OPERATION.

1. Further saturation of the system with toxins; especially dangerous to life are those absorbed from a gangrenous or obstructed portion of the gut. It has been demonstrated by Crile that this toxin produces a lesion in the cells of the central nervous system, and when experimentally administered to animals the symptom-complex of ileus appears with a fatal issue in five or six days.

2. Bacterial pollution of the blood stream with consequent septic thrombosis or embolism.

3. Lymphatic infection resulting in empyema, subphrenic abscess, multiple abscess of liver or cholecystitis. In this connection it should be remembered that the appendix is more richly supplied with lymphoid tissue than any other portion of the intestinal tract.

4. Progressive suppurative peritonitis, due to gross or bacterial perforation and

a dissemination of the infection from ineffectual adhesions.

FACTORS INFLUENCING OUTCOME.

Rational pre-operative treatment is the first and most important step in minimizing the existing pathology and favoring surgical success in the treatment of advanced acute appendicitis. The anesthetic should be nitrous oxide-oxygen, alone or in combination with infiltration anesthesia. Ether or chloroform seriously increase the danger by adding the toxaemia of their narcosis to a system staggering under an overload from infection.

The discriminating judgment of the surgeon in determining the extent of the operation, in the choice of technique and his manual dexterity in executing his plans are important.

In calling your attention to the modification of the gridiron incision as a routine in the operative technique of suppurative appendicitis, I hope to demonstrate by the accompanying illustrations that ample room, efficient drainage and the lessened danger of post-operative hernia are secured by this method. The base of the appendix is immediately under the transverse incision. With this guide, tracing the appendix is easy. Where more room is needed, a right angle vertical extension is made through the fused aponeurosis at the outer border of the sheath of the rectus at the inner end of the transverse incision downward for one or more inches. This downward extension gives a triangular flap which, when retracted, exposes the right lower abdominal quadrant. There is no injury to the deep epigastric vessels or to the twelfth intercostal ilio-hypogastric nerves, preserving the blood and nerve supply to the lower right abdomen. Choice is allowed for the emergence of drainage wicks at any of several points in the incision line or stab drainage may be employed. There is no chance of hernia in spite of drainage except for the one or two inches of the vertical right rectus incision, and hernia is minimized at this point on account of the preservation of the blood and nerve supply. After walling off the uninvaded peritoneum every pus pocket should be opened and drained and the appendix removed in every instance if possible without evidently interfering with the chances of patient's recovery. A fecal fistula is better than a gangrenous appendix. All thrombosed and necrosed areas of omentum should be excised. Ample rubber-covered gauze wicks or sheets of rubber tissue-filling pus cavities or infected areas are superior to the gauze or rubber tube drains. In solitary appendiceal abscess simple drainage will temporarily relieve; however, the appendix should invariably be removed before the patient is discharged from the hospital. If the appendix is gangrenous, the omental or mesenteric vessels thrombosed, or if there is present paralytic or mechanical ileus simple drainage after incision is inadequate and ineffectual surgery. If the toxaemia at the time of the operation is not of fatal amount, the only hope lies in the removal of further sources of toxin formation and absorption. The errors of appendiceal surgery today are from timidity or so-called conservatism and not as a rule from boldness in the execution of a radical and rational technique, and also from ill-timed operations due to a failure to investigate the bearing of the pathologic process on the patient's resistance. This comes as a result of the misinterpretation of the Ochsner-Murphy method of pre-operative treatment and of the lack of appreciation of the daily pathologic changes and stages as a result of the infection within the appendix.

POST-OPERATIVE CARE.

At the close or during the operation a pint or more of normal saline or distilled water should be administered by hypodermoclysis. The Murphy drip commenced as soon as the patient is returned to bed and placed in the Fowler position. Morphine in sufficient quantities to relieve pain. The more desperate the patient's condition the more imperative the need of morphine. There are two essentials—the supply of fluids to the tissues and the lessening of waste and absorption. Proctoclysis, hypodermoclysis, infusion intravenously, and morphine. Intravenously give either glucose, sodium bicarbonate or Fischer's solution to supply fluids, nourishment and to correct or diminish acidosis. Gastric lavage for excessive nausea, every four to six hours as may be required. In acute dilatation of the stomach where quantities of duodenal

fluids are regurgitated, I have found apparent benefit following the reintroduction of the siphoned stomach contents into the rectum through the proctoclysis. The rationale of this is to supply the system with the hormones otherwise lost in the lavage and vomit. Rectal flushings of essence of peppermint one teaspoonful to the quart of water is valuable in removing flatus, lessening the discomfort of distension. Pituitrin is most useful in distension to favor the passage of gas, but should not be used till after the third day, when ordinarily it is permissable to stimulate intestinal peristalsis. Milk and molasses, equal parts, afford the safest and best purgative enema. It, too, should not be given till after the third day following operation. Post-operative purgation by oil, calomel or magnesium sulphate within the first three days after operation is an abuse; failing as a rule to evacuate the bowels, they excite nausea and vomiting, accentuate abdominal pain, adding to the general discomfort of the patient and even when acting on the bowels serve no distinctly immediate therapeutic necessity.

The routine use of strychnine, caffein, spartein, nitroglycerine and strophanthin is to be condemned. A study of the pharmacology of these drugs is convincing that they are irritants and not true stimulants which will increase the resistance of lowered vital powers tiding them over critical stages; they may whip up fagging nervo-vascular organisms and the reaction hasten the unsought end.

Morphine, atropine and pituitrin have distinct indications and are valuable when used as indicated.

Glucose and soda administered intravenously most nearly approach the ideal stimulant in restoring tone to the heart muscle, in affording energizing nutrient to the tissues and in helping elimination through the emunctories.

The post-operative care is often dramatic in bringing about a successful outcome, the operation being the initiation of the treatment rather than the master stroke which ends either the disease or the sufferer.

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DISCUSSION.

Dr. Jere L. Crook, Jackson, Tenn.—Fearing that I might be late, after the very royal entertainment afforded us last evening, I prevailed upon my friend to allow me to look over his paper before it was read this morning, and I wish to say that the paper, as a whole, is so able an expression of the very best of modern thought in reference to delayed or neglected appendicitis that an attempt to add to the paper along that line would be just like an effort to adorn the lily or to paint the rose; but in the title itself there is suggested to us a very important thought, and it is to that part of the paper that I shall address my remarks.

If you will observe the title as a whole, you will see the responsibility rests upon the medical profession to reduce the mortality of this dread disease. We should attempt as a profession to go further than simply to render our duty to the individual members of society whom we may be called upon to treat.

There is a higher obligation resting upon us than contained in the word "doctor"—"teacher." The vista of helpfulness to humanity stretches out before us in all lines, where we may teach the people, where we may lengthen human life and lessen human suffering. We have been eminently successful in teaching the people how to prevent and how to cure tuberculosis. We have had similar success in the line of malaria and yellow fever, but, my friends, surgeons and members of this body, we have not addressed ourselves directly to the problem of teaching the people the absolute necessity of early operation in appendicitis. That is one of the most important things that the surgeons of the world could do today, and if we would do our duty and teach the people the necessity of early operation, then it would not be necessary to have read before us the elaborate paper we have heard this morning on neglected appendicitis. Whose neglect is it? We must, as surgeons, eliminate ourselves from this problem, because we can not carry the burden of neglect. We must teach our brother physicians that they must eliminate themselves from the burden of neglect; then the only burden remaining is the neglect of the patient or of his guardian, if he be a minor. We must teach those who do not realize it as we do the absolute importance of early operation within the first few hours of appendicitis, or to operate in the interval, should the patient be so fortunate as to recover from the first attack. Instead of devoting one entire day to tuberculosis — important as that is, or to malaria—let us ask for a little part of the general program next year in order to teach the family physician, if it be necessary, and to teach the people themselves the necessity of bringing their loved ones and placing them in our hands when we have the very best chance of saving their lives. Why should it be, to our shame and disgrace, that a disease that is so well known, and the treatment, fortunately, so well known, that there should be such a mortality in cases where we can select the time for operation? If we believed we could cure a case of tuberculosis in the first days it started, wouldn't we stress the point that that patient should be brought to us? We stress the point that in ty-

phoid and other diseases the patient must be seen early—I mean to the public? We must impress upon them to bring their patients to us sooner. There is no question but what many physicians—well-informed men—are doing their duty to their patients. If they are not, doubtless it is up to us to teach them the necessity of bringing their patients to us in time.

Dr. Lucian H. Landry, New Orleans, La.—I was very glad, indeed, to see that Dr. DuBose emphasized particularly the fact that we should cut out purgatives. It has been our rule, in the last few years, to teach in our medical school to try to lay stress upon this point to the student, that if he does nothing and gives no purgatives he will be doing the best thing. Purgatives have killed more people than bullets—not excepting the present European war.

The point is made, for instance, when we see these bad cases of perforated appendicitis we do not ask them if they had a purge, but when they had a purge. Dr. DuBose said that 97% of his perforated cases are due to purgatives. I think he is correct, and, if possible, he is underestimating.

That is the point that is worthy of mention—the avoiding of purgatives.

Dr. F. L. Watson, McAlester, Okla.—I was not so fortunate as to hear the doctor's paper, but from the discussion I grasp the trend of affairs, and I desire to emphasize the point that the primary mortality of acute appendicitis should be nil.

If the family physician were called to see a case where all the clinical manifestations were those of malaria, he would, unquestionably, prescribe quinine, notwithstanding the remonstrances or the misgivings of his patient or of the family. He would be satisfied with no other prescription. When he is called to see the patient and makes a diagnosis of acute appendicitis (and it is almost classical) he should prescribe the hospital and the operation, and he should not rest at that; he should say: "That is **the one and the best thing for you,** and it is all that I am going to give you." He might add, then, that: "Unfortunately there are men in this community who will prescribe medicine and try to get you over this attack, but that is radically wrong;" and if he is a man conscientious in his chosen profession, he will say to the acute case of appendicitis: "Not a particle of medicine for you. You have called me here for my advice, and, if you accept it, it is the hospital for you and an operation."

Dr. S. E. Millikin, Dallas, Texas.—I regret exceedingly that a paper like this should be presented on the last day, with such a small audience. This paper should have been brought before one of our general sessions. I would say it should be where, as Dr. Crook has suggested, the layman may know the importance of this advance work. It is a matter of education.

As to the purgative, every surgeon knows what it has done, but I will have to tell a little anecdote told me by one of my surgeons in talking with an old practitioner.

He said: "Doctor, what do you think of the morphine treatment of appendicitis?" And, "What do you think of the purgative treatment of appendicitis?" That he had "discussed this thing pretty thoroughly with myself and they both seem to be good, and, as they are both good, I use both."

Dr. J. Shelton Horsley, Richmond, Va.—This paper is so excellent that it needs no encomiums, but there is one point with which I take somewhat an issue, and that is the idea of arranging an operation for some set, particular time, with reference to the clinical course of the disease.

As long as the inflammation is confined to the appendix, it is certainly safe. It is dangerous only when it filters through the appendix and reaches the surrounding tissues. Now, why does it go through? Always because of perforation. Not necessarily a gross perforation that you can see with the naked eye, but by the bacteria or the toxins. Let's bring it back so as to place similar lesions along the whole gastro-intestinal tract on the same pathological basis. If you have a perforation of typhoid ulcer or duodenal ulcer, what would you do then? You would operate. If you had a perforation from a bullet wound what would you do? Operate. You would not wait for the second, third or fourth day; you would operate as soon as possible. If you haven't got a perforation it is perfectly safe. If you have got a perforation, operate as soon as possible.

The great danger from stirring up and messing up things that used to obtain does not obtain now to such a large extent, because of the Fowler position and the protoclysis of Murphy have, to a large extent, done away with these dangers. The cases of appendicitis that I have lost have come to me late except in one instance—an unusual case, and the only one I have known—that was in the first six hours after the beginning of the disease.

I believe if we are going to teach the people that the patient should be operated upon early and they send us a case in three or four days and we put it off, we can not avoid criticism.

If we had a perforation in any other part of the gastro-intestinal tract, we would operate at once. Why not operate in appendicitis when the diagnosis is made?

I think the only way to count the statistics in appendicitis is to count not necessarily the cases you operate upon, but the cases that you see and that your patrons see. If, for instance, you take a case that comes in on about the third or fourth day, and it is pretty sick and gets over these three or four days, nature has helped the patient out. It is then a comparatively simple case, and on opening the abdomen ought to get along pretty well. If you operate at once you might possibly lose some of those cases; but if you compare that mortality with the mortality of those who need help the worst, when there is greatest need for it and are not operated upon, you will find in the long run that surgeons who operate carefully and gently at once will have a lower mortality rate than those who delay operation at certain stages of the game.

Dr. Fred H. Clarke, El Reno, Okla.—There is just a word of caution that we need to remember with the doctor's paper, or rather from the statements of one or two who have been discussing it.

I have gone through all that the doctor has said personally. You know no one is so foolish

about himself as the physician, and I put off the evil day until I had a ruptured appendix—so I speak with a great deal of feeling. It was pure carelessness. I was urged by my good wife to submit to operation long before I did, but because of the pressure of business and other engagements, I put it off.

The word of caution is this: The doctor has said in about 97% the perforation comes from drastic purgatives or "from purgatives," to quote him exactly. In my own case perforation came in four hours from the onset, with no purgative. In four cases that I can recall in my own mind, in my own practice, it is the same; so all practice must vary in different places and different individuals.

I think that the fatal cases that I have had (and I guess I have had my share of them) have been almost universally cases that had been moved some little distance from the home to the hospital. I have tried to remember the cases upon whom I have operated—out in the country, some of them, under conditions that were anything but pleasant or inviting, and yet I can not recall a single fatality among those operated on in the home under favorable conditions; but I have had among those that have come to the hospital, due to the fact that it takes time and increases shock to transport your case. Usually some man fifty or a hundred miles distant will be called to see the case and then it will come to you in the hospital, and the delay due to the removal of the case makes it too late for operation.

In connection with that, also, is the morbid fear many have of the hospital; so many times this causes delay. (I am speaking largely of our country practice). Sometimes these cases that are less grave and are neglected are fatal because of this very fact. I saw one just a few days ago where operation had been delayed because of that very thing. I am speaking more particularly of the severe cases and especially of the perforated cases. I do not think we ought to move them.

Of course every man bases his ideas upon his own experience, and mine have been based upon the cases that I have been able to go over in my own memory while listening to the paper this morning, and my fatal cases have been those that have been moved, and my recoveries cases of immediate operation or operation at the earliest moment. I was operated on in my own home.

Dr. J. H. Blackburn, Bowling Green, Ky.—There were just two points about which I wished to speak particularly, and the first is that of purgatives. I had a recent experience. While in the middle of an abdomen that was the result of a neglected case of appendicitis, a message came and as soon as I could get away I drove twelve miles up the country.

The little ten-year-old girl had had a stomach ache on Wednesday morning, the family physician had seen her on Thursday morning and had diagnosed appendicitis and given two grains of calomel. Friday morning at 4 o'clock she had the evidences of a ruptured appendix. The physician was called back and I saw her about noon of Friday and transported her to the hospital in my car and opened the abdomen as soon as possible and found the ruptured appendix.

The other phase of it is the question of education. If we folks at home who do this work have done anything we have talked. We have iterated and reiterated that the patients should be operated upon early, and we do that with our medical friends, by all means. We have iterated and reiterated that they should not be given purgatives; and after a little heart-to-heart talk with this medical friend, when I said to him, without any hesitation, that his two grains of calomel had ruptured that child's appendix, he did not oppose anything that I suggested regarding the treatment of that case. He was very willing and ready to insist to the family that the child should be carried to the hospital and should have the abdomen opened immediately.

Now that is the education of the family physician as we have attempted to do it, and I have not hesitated in four or five instances to say to a doctor that, in my opinion, his purgative had been responsible for the condition of the patient, and, as a rule, they do not give the purgative in a second case.

As to the education: It occurs to me that instead of reading this paper of Dr. DuBose's over at the public meeting, as has been suggested, we might read it at the Section on Medicine. (Applause.) The practitioner is the man we have to educate.

I recently had occasion to discuss this very question with our county society, "The Causes of Death in Appendicitis," and two prominent causes that I mentioned were the family physician and the family. So in addition to the practitioner we must educate the public as to the necessity for operating in all cases if we would save the greatest number of lives.

Dr. F. M. Brown.—I have been in the Surgical Section the last few days and have heard a great deal about the country doctor, the family physician, etc., and I represent that type of doctor here today. Living in the small towns where we have not the facilities of a hospital like you men in the larger places, as a country doctor I want to endorse the paper of Dr. DuBose.

I wish also to endorse the doctor in regard to transporting these patients from the country home to the hospital. We all know that the hospital is the proper place to operate upon a case of appendicitis, if it is recommended, and we can go there without any trouble to our patient, but my observation and experience have been, in my cases of suppurative appendicitis transported to the hospital, my mortality has been much higher than the cases operated on in the home.

I think the continued vibration of the train causes a continual jostling of those intestines, and will cause more perforations than the chances we take in opening those cases right out in the home under the best sanitary facilities we have.

It is customary in my part of the country, and had been for years before I went to practicing medicine, when they saw a case of appendicitis to give a big dose of magnesium sulphate, but I have discontinued giving any purgative at all, thinking that the best thing to do was to empty the stomach and keep these patients absolutely quiet.

Morphia has been my sheet anchor, and so many physicians and surgeons have discussed the matter of its masking the symptoms, but I do not know of a case that it has masked the symptoms for me. If we know what he has, why let him suffer when morphia will relieve it?

A Member.—The question has come up in my mind if it would not be better to let the surgeon do his operation in the home rather than subject the patient to a trip of several miles in a train. We have been taught to administer opiates to keep them quiet, and it occurs to me that transporting them and making the railroad journey predisposes to the danger of perforations, and I would like to hear several others, to whom this has been a question, discuss that point. It has been quite a question with me, and I was never sure whether I was doing right in advising this patient to go to a hospital or whether I would do better or the patient's chances would be better if he were kept at home and the operation done under more favorable circumstances.

Dr. J. S. Ullman, Natchez, Miss.—In the first place I feel as Dr. Horsley does in the matter of time as when to operate. We have all been taught as surgeons, and it is our practice, in every condition where there is pus suspected to open, disinfect and drain. In a condition such as obstruction of the bowels, if we can not go any further, our duty is to open that abdomen and get up a loop of intestine and evacuate its toxic contents. We can content ourselves with that much if we have not the opportunity to do more. It seems to me that no matter how grave the patient's condition may be, we can certainly, with very little risk, and especially if we can follow out Crile's masterly technique of Anoci-association (I do not mean to say we are every one of us Criles, but we can follow his teaching) and by opening the abdomen and working gently and carefully down to the pus and putting in a tube, and being brave enough to stop at that point, we can do much for our patients' welfare.

The second point is in regard to the question of morphine. One of the gentlemen who preceded me a moment ago had something to say about the masking of symptoms. The point is this: After you have given your morphine you never know what symptoms have escaped you, what symptoms you have masked, or anything else, and of course if you are trying to save your cases for later operation, you may feel reasonably certain that you are going to have perforation whether you give your morphia or not. Then, if you can content yourself to look at it from that standpoint, well and good, give your morphia. But it seems to me poor surgery to use morphia and jeopardize your patient's condition, because we are taught by hard experience that a perforation in any condition, in any part of the abdomen, should be handled, preferably, within the first six hours. But after your morphia has been given you can not tell whether you are going to get at that perforation within six days or six hours. It will surely be overlooked in a large percentage of cases during the narcosis.

Dr. R. C. Dorr, Batesville, Ark.—I think it is wrong to lay all ruptures to the country practitioner giving cathartics. This often happens in a girl sitting on a bench in the school house, or a man walking around. The pathology is what causes the rupture 90% of the time, and while I condemn cathartics as well as any one else, to my mind to say that it is solely cathartics is nothing but want of knowledge.

You say he is better off if operated on at home. No doubt about it. I have operated at the home, with the kettle for a sterilizer, with just as good outcome as I have in the hospital. It is not **where**, but **when** you operate; and the idea that none but those taking cathartics rupture is wrong, and the germ producing that disease has much to do with that rupture, because twenty years ago when we gave cathartics, many of them got well, and my ideas are that a small percentage of ruptured appendices—unless you take Dr. Horsley's view that they all leak—that is true. But we find a very small percentage, and I do not think there is so much in saying wholesale that it is the practice. Then, it has a death rate from its pathology, and from anesthetics, and it is dangerous to tell people that he would not have died if you could have seen him at the right time. I do not believe that that is so.

Dr. DuBose Closes.—Replying first to my friend, Dr. Dorr, the statistics given were not mine. They were Dr. Deaver's and others', representing the leaders in the surgical world. When a man says it is "tommyrot" in commenting on these statistics, he is reflecting on the compilations of the greatest men in the surgical world.

Dr. Horsley has touched on one of the most difficult things—the matter of decision as to when to operate when the patient is not seen until after the third day. I, for one, believe it is most advantageous to operate at once during the first three days. It should be remembered that operations done on the third day are less safe than those on the second day, and those on the second day less safe than those on the first day of the attack. The speaker expects the doctors in country and town alike to make the diagnosis when the case is seen, and it can be made in six hours after it is seen. If any physician can not make a diagnosis of appendicitis within that length of time he should go back to school, for by the time he has emptied the stomach and the lower bowel by an enema, if the pain is not relieved, it is not bellyache, but an acute condition requiring surgical interference. A blood examination will give additional confirmative information.

My living is dependent upon the country doctor. My father was a country doctor, and I take off my hat and bend my knee to the country doctor and to the general practitioner. (Applause.)

Dr. Brown made a splendid statement when he said: "Unload the stomach, give an enema and then morphia, if not relieved," for he believed then that the patient had appendicitis and he transported him to the hospital.

To withhold morphine because it masks the symptoms is withholding from the patient with appendicitis the one and only drug that helps the condition. It does nothing against nature unless it helps to befuddle an already befuddled diagnostic mind.

I believe that every patient with an acute abdominal pain, as soon as he is seen, should have

a blood examination made, and most of the doctors in Alabama are able to do it, and are doing it. During the past few years the physicians who have referred these patients to me are sending them in early, and it is rare, indeed, that any are brought in during the last stages of the disease. I have seen people brought in and die within a few hours without operation, their condition being so extreme when they reached the hospital. And they are dying now from purgatives, and we know it. When a man says it is a baby act to say that purgatives produce peritonitis, he is contradicting the statistics of the best observers in the world. The figures show that only 3½% of those who were given purgatives escaped perforation, and they also show that less than 1½% of those who had the Murphy-Oschner treatment from the inception of their appendicitis had either a perforation or a peritonitis. (Applause.)

Monihan says that spreading peritonitis is an aperient peritonitis. The purgative makes the pathology. Without purgatives, but with a morphine, peristalic rest treatment from the beginning of their attack, they do not have perforation.

In the twenty-two and a half years that I have been doing surgery, my appendicitis cases have run into the **thousands,** perhaps. I have seen only one case that had a perforation without a purgative being administered previously. He was operated on within eleven hours from the onset of his first pain, and he had a perforation. This was the only one that I have seen who did not have a purgative and who did have a perforation.

The fact is that 75% of all the cases of peritonitis that come into the hands of the surgeon are due to appendicitis—the 25% remaining arising from all other causes. Eight per cent of the people who are attacked with appendicitis die under the present regime, when not 1% ought to die. I did not say that the general practitioner was responsible for it. Ill-timed operations will add to the pathology, not only in point of time, but in extent of operation.

The principal thing that this paper has dealt with is prophylaxis of peritonitis from appendicitis. The imperative thing to do is to give the patient the advantage of the present-day scientific knowledge, and if he will not accept the advice given as a result of using all of the means indicated to help his condition, in that he should be operated on immediately, then turn him over to some doctor who believes in calomel and salts (if there be any in this day and generation) and let him sign the death certificate.

We hear about drainage, tubes and gauze. I wish to warn against the use of either tubes or gauze. The ordinary dental dam will get out more fluid from the abdomen than any other form of drainage, and will be conducive of fewer post-drainage adhesions. There is less liability of fecal fistulae or pressure necrosis than follow the use of drainage tubes.

There is something I want to say about the post-operative treatment of these cases in closing.

In these septic conditions there is a drying up of the tissues and an acidosis that hastens death. To combat these an intravenous solution of saline and the hypodermoclysis of distilled water should be used. I have tried the distilled water under one breast and the normal salt solution under the other, simultaneously, and the distilled water has been absorbed twice as rapidly as the saline. In desperate cases the hypodermoclysis should be started as soon as the patient is brought to the operating table.

With reference to the anesthetic: Infiltration anesthesia and nitrousoxide narcosis should be used. The severer cases should have the major part of the operation done under infiltration anesthesia, which can be employed without any trouble to operator, or pain to patient, if you have given him previously a masking symptom dose of morphine. (Laughter.)

In the presence of post-operative ileus, the doing of an enterostomy under local anesthesia is frequently a life-saving proceeding and should under no circumstances be neglected.

CONCLUSIONS IN THE STUDY OF INTESTINAL STASIS.*

By Joseph E. Johnson, M.D.
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To develop into an intestinal surgeon is a process of evolution. We begin by removing the appendix for all pains in the right side, and feel ourselves quite a surgeon. As we pursue our practice longer with the same clientele, we see a goodly number returning with no relief. We begin to observe more closely, we discover adhesions with which the appendix is blamed. Later, we learn to diagnose the different ptoses of the viscera and in these cases we note the obstinate constipation and the violent toxemia. After a futile attempt to relieve these patients by medical means, we advance into the next stage, the mechanical stage. Then we attempt to correct the ptoses by suturing the stomach and colon to the parietal wall, to hold them near their normal position. Dr. Morris says that by the time he learned to do the operation well he discarded it, and his observation has been that of most surgeons who have given this subject serious consideration. In my early replacing or hitching up operations it was unsatisfactory to do it through a median incision, so I conceived the idea of making a large transverse incision down to the rectus muscles and, by raising these from their sheath, continue through the

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peritoneum in the same line, thus giving an incision where I could do a first-class hitch-up operation. I did this a number of times, for which I have to apologize to every one for whom I have not taken it down and resorted to other means. The mechanical stage in this evolution has produced some operations which, from a mechanical standpoint, seem to be efficacious, but from a physiological standpoint are worse than useless. Ileosigmoidostomy is an example. This mechanical stage marks the blackest page of disappointment in this field of surgical endeavor. Observing our failures by our mechanical means, we advance to the next stage, which is a study of the physiology of the intestines, and note the failures, embryonic and otherwise, which cause the trouble; then we are well launched into the study of toxemia. The accepted idea of stasis is delay, so let us study this from a standpoint of delay. It is at the end of our study that we get our first real conception of the subject in hand.

I will, necessarily, quote frequently from my own paper read before the Tri-State Medical Society of Mississippi, Arkansas and Tennessee (1914), as from this study I wish now to give the conclusions reached.

Let us look at the intestinal track as a whole. We will observe, first, that at the lower portion or orifice of each division of the intestines we have a sphincter, which is so placed for a very definite physiological reason. The function of the pylorus, normally, is to retain the food in the stomach a sufficient time for it to be acted upon by the digestive juices. When it has reached a certain degree of acidity, the acid in the stomach stimulates it to relax and allow part of the stomach's contents to pass into the duodenum. When the acid comes into contact with the mucosa of the duodenum, the pylorus is stimulated to contract and remains contracted until all acid in the duodenum is neutralized, when it again relaxes, and this continues until the stomach is empty and all of the acid in the duodenum has been neutralized. Then the pylorus will lie open and the bile and duodenal contents will flow back and forth through it without causing disturbance. Water almost immediately passes through the pylorus. The vagus stimulates the pylorus; the splanchnic inhibits it.

The ileo-cecal sphincter also has a double function. First, to hold back the digested proteins a sufficient time for absorption; and second, to prevent the regurgitation of the contents of the cecum into the ileum. The anal sphincter retains the contents of the colon until a convenient time for emptying.

The peristalsis of the stomach is well known. The peristalsis of the small intestines is a wave of dilatation followed by a wave of contraction which is regular and continuous. It is very little, if at all, influenced by cathartics or stimulants. It is controlled by a local nerve mechanism in the walls of the intestines. In the colon we have peristalsis and anti-peristalsis. With a giant peristalsis wave the contents of the cecum may move forward to the splenic flexure, or with a wave of anti-peristalsis be brought back an equal distance. Anti-peristalsis prevails in the proximal half of the colon. Forward peristalsis prevails in the distal half. The stomach is a receptacle where food is received and prepared for digestion. It should empty in four and a half hours. Food delayed in the stomach, beyond this time, will undergo putrefaction just as definitely as if it were removed with a stomach tube after four and a half hours and placed in a pan under the radiator. Patients with stomach delay are always eating bad food. The small intestine is the great eater and the terminal ileum has been proven to be the great absorber. The colon is the sewer; its mucosa has its natural defenses against the contained bacteria. It absorbs practically nothing but water. It will absorb a small amount of amido acid. Albumens or peptones by enemata are not absorbed. The mucosa of the intestines below the oesophagus is insensible to heat, cold, or pain. The peritoneal covering and even the intestine itself may be incised without pain, but pulling upon the peritoneal covering or its mesenteric attachment gives intense pain. This should be remembered before making adhesions to the parietal wall.

According to Lane's theory, the product of a finished digestion, if delayed a short time in the terminal ileum, will reach the next stage, that of putrefaction, the absorption of which is the source of

the toxemia which in turn causes visceroptosis. I agree with Lane as to location, but differ with him, radically, as to the source of the toxemia.

Now, let us look at stasis in the accepted sense of delay and apply our study of physiology. There is one physiological fact with which we are all familiar, and that is that if you irritate the intestinal track at any point, all the sphincters above, beginning with the nearest, will make an effort to protect the irritated part against the contents of the intestines above. To illustrate: we take a case of chronic appendicitis which is causing a great deal of trouble. There is disturbance in the upper abdomen which is so pronounced that we make an incision so as to explore this region. When we remove such an appendix we find no inflammation or infection. It may be atrophied and kinked. We are frequently in doubt as to whether we have removed our pathology when we remove such an appendix. The patient is subject to so-called biliousness or spells of toxemia and has lost weight, also has the nervous disturbances which go with the toxemia. We have all noted the rapidity with which these patients return to health and weight after removing such an appendix. We have all noted that in cases of hemorrhoids or ulcerated rectum the picture is very much the same as in chronic appendicitis—loss of weight, general toxemic condition—and upon removing the irritation the return to health and weight. Now, why?

In the cases of kinked appendix, the irritation of such an appendix causes the first sphincter above it (the ileo-cecal) to make an effort to protect the irritated part against the contents of the ileum—we have an ileo-cecal spasm, which may persist even as long as twenty-four hours. With the ileo-cecal spasm and the forward peristalsis in the ileum, we have a dilatation of the ileum as in an obstruction. The pain is not in the appendix, but is an ileal colic. Secondarily, as in a block system on a railroad, from the irritation in the ileum we have a protecting pyloric spasm. Thus, from an appendix which in itself shows very little trouble, we may have a decided ileal stasis and a secondary stomach stasis. This will explain the entire condition. The same condition prevails from an irritation of the intestine anywhere from the anal sphincter to the pylorus. There is unquestionably a co-ordination, under irritation, between the ileo-cecal sphincter and the pylorus. Food taken into the stomach will cause the remaining contents of the ileum to pass into the cecum (photo) and it will overcome the spasm of the ileo-cecal sphincter. We recognize cardia spasm. We have pylorus spasm due to irritation of the gall bladder.

The toxemia, which we have from a delay in the stomach, in the ileum, or the colon, is the toxemia which gives the dull headaches and a general ill feeling, the so-called biliousness which a cathartic will relieve for the time being. Let us call this delay toxemia.

Let us look at visceroptosis or splanchnic paralysis from another standpoint. Take a patient, a young woman of seventeen, who is neurotic, fairly well nourished, subject to toxic sick headaches from early childhood, with repeated attacks of soreness in the cecal region, without colic. We give her a bismuth meal and find she has visceroptosis. Her stomach empties on time, the small intestines empty on time, the colon, though prolapsed, empties on time. The appendix is patulous. *There is no stasis,* and still the toxemia is severe. We remove the appendix, straighten up a uterus which is generally retroverted, noting that the cecum is large and movable, fine veils or membranes covering the cecum, ascending colon, and the terminal few inches of the ileum, and she is not relieved. See this patient ten years later. The condition has steadily progressed until all of the viscera are piled down into the pelvis. She has been treated by every system, medical and non-medical; she is the dread of the doctor's office. As Moynihan expresses it, "she is of attenuated form, she is querulous and introspective." She has cold hands and cold feet; she has all the symptoms of profound toxemia. If we should look, then, at this same region, we would find the Jackson membranes, veils, possibly Lane's kink, and the cecum and ascending colon so distorted that it is practically a mass of diverticular protruding through these membranes. If we stop to think we never see these membranes except in this locality, and always involving the

same structures. The case history is characteristic, the visceroptosis is as definite and uniform as in any other condition with which we are familiar, so we must conclude that there is one definite etiological factor which is always responsible. Now, what could produce such a condition? The membranes and veils are only nature's effort to build stronger walls to protect against infection. The appendix, in nearly all of my cases, had been removed with no relief.

Hertz, in 1897, described an ileo-cecal regurgitation. Case has, later, verified the finding. If we have an imperfect ileocecal valve which will not prevent regurgitation, this will answer our question fully. Let us look at the condition which would then prevail. On one side of the cecum, which is the cesspool of the sewerage system, with its contents one-half by weight bacteria, the other half the putred products of decomposition, we have peristalsis and anti-peristalsis in the colon. On the other side we have the great eater, the terminal ileum, which has not the natural defenses against bacteria. With an anti-peristalsis, we have a regurgitation into the ileum; we have a toxic poisoning plus a bacterial infection. The patient is literally feeding upon her own excreta. The toxemia or poison causes a splanchnic paralysis, which is just as characteristic of this poisoning as dropped wrist is of lead poisoning. The bacteria are taken up by the lymphatics in the ileum and produce a peri-ileitis, involving the last few inches of the ileum, and a peri-colitis. The infection to this patient is attenuated, and this is why the veils are soft. The veils below the ileum may become rotated and form a narrow band. which is termed a Lane's kink. It is all a part of the same process, the same cause which gave the violent sick headaches in early youth, the same toxic poisoning which has produced the last named condition. I do not think there is any doubt that in all these cases the trouble is a congenitally imperfect ileo-cecal valve. Coffey described a cecum mobile of congenital origin. He is right. Dr. Morris suggests a taint of degeneracy. He is right. I have observed a mother, a daughter and a granddaughter who have visceroptosis, and there are probably other cases in the same family. Is it not quite possible that the shape of the internal organs may be just as much of a family characteristic as the external features?

The thickened terminal ileum for which Lane operates, and which he blames for the condition, is the end result of a chronic infection. It is not the cause of the trouble, but the result. It is my belief that if the regurgitation infection and toxemia poisoning can be relieved, the splanchnic paralysis will recover just as dropped wrist recovers when the painter stops the source of the lead poisoning.

I present you a picture of a case operated upon by myself one year ago. She had a visceroptosis, some fine veils, and an appendix which was patulous. In this case I did an ileo-ceco plasty, as described in my paper of 1914. I also present pictures demonstrating an ileo-cecal spasm, which is overcome by the stimulus of taking more food. In these advanced cases we have a distorted and infected colon, a thickened terminal ileum. Nothing short of a right side colectomy will be of any avail. I have operated upon eleven such cases, ten of which were successful, showing that the operative mortality is not prohibitive, and when we consider the hopeless condition of these patients and the wonderful relief obtained, it would be justifiable with even a greater mortality. When you look at these two pictures you will readily see that you are able to recognize very nearly the age of the patient.

As a differential diagnostic point, repeated soreness in the right side preceded by toxic headaches without colic, is not appendicitis, but regurgitation infection. In appendicitis we always have the colicky pains.

In conclusion, let me emphasize that there is a toxemia from delay which is quite different in its action from the toxemia of regurgitation. The toxemia and infection of ileo-cecal regurgitation is the cause of visceroptosis and the formation of the inflammatory membranes. It has been pointed out by several of our distinguished surgeons that, though the viscera was much displaced, it still emptied on time. This is true of all regurgitation infections and toxemia in the earlier stages. We must look upon this as a progressive condition, the origin of which is congenital.

DISCUSSION.

Dr. Louis Leroy, Memphis, Tenn.—I feel, in a measure, out of place—an internist discussing a surgical operation—but I feel that the biggest field today that requires combined study of the surgeon and the internist lies in this study of stasis and reflex obstruction, because, in the first place, the internist is also always the man who is worried to death and has been with these cases of a chronic nature. Four out of five, I believe, of our chronic neurotics, and, you might say, our habitual invalids, may trace the foundation of their troubles to absorption occurring in the ileum of materials which have already left the ileum and come back, or which are being held by either visceroptosis or other obstruction in some other point.

It is simple enough to class the whole thing as autointoxication and think you have said it all and let it go at that, but that is scarcely the beginning.

In this principle of reflex association of different groups of sphincters we have the explanation of many of the ileum cases. You have, all of you, I am certain, operated for appendicitis on some chronic or semi-chronic cases and failed to get anything like relief in your patients. They still have the digestive troubles, loss of appetite, chronic grumbling pains, gaseous distention, loss of weight, general mal nutrition, which follow in the wake of some cases. You attack the case, remove your appendix, and expect to get the brilliant results you have gotten perhaps in many previous cases. In this case you will not. Why? Merely because there is some irritating focus at the region of the ileocecal valve which is reflected to the pylorus, and is giving pyloric spasm from the other end of the intestine. Of some of your gastric ulcer cases the same thing is true. You attack a gastric ulcer from the surgical standpoint, after your medical man has failed, and you are sure as soon as you get drainage your patient will be all right, but this may not be true. If you go further you find some of this same pathology in the ileo-cecal region, and had this been corrected, even without ileo-cecal drainage, you would have cured the ulcer, perhaps. In other words, reflex pyloric spasm, originating in irritation in the ileo-cecal region, will give you that retention of acids in the stomach which requires but an added detail to start the ulcer and to maintain it. You will gain nothing by draining that stomach unless it has gone on long enough to give you absolute pyloric obstruction or gastric dilatation. An ileo-colostomy may permit a relaxation of the pylorus; you will not be retaining your excess of acid, and from a distant location your stomach condition will improve, and without attending to that you will be disappointed in some of your gastro-intestinal work.

The same is true in rectal conditions.

Dr. Isidore Cohn, New Orleans, La.—I would like to ask the doctor a few questions. Did I understand you, doctor, to say that the pain you have in some of these cases is due to pain within the ileum?

Dr. Johnson—Ileal colic.

Dr. Cohn.—My understanding of the physiology of pain in the intestine is the following: I believe a few years ago it was pretty clearly proven that the nerves of pain are in the parietal peritoneum. If that is the case, I want the doctor to explain how this comes about without pressure on the parietal peritoneum. The doctor told us about removing these kinks and curing the patients. What makes these kinks if there is no bend, no congenital membrane, no inflammatory process, thickening of walls or interference with the lumen of this intestine?

The doctor also said if there was any one here who had ever seen congenital membranes without visceroptosis to holler, or visceroptosis without congenital membranes, to holler loud. I have seen both, and some of these congenital pericolic membranes seem to act very much in the same way as the ligament of the liver, preventing ptosis instead of causing ptosis. The doctor also said if these things were there not to touch them at all. Sometimes if they are not doing harm it is a good thing not to touch them, but if the patient has them and there is not any other pathology to explain the condition probably touching them a little bit will help the patient.

Dr. J. S. Ullman, Natchez, Miss.—I have seen some cases of Jackson's membrane where there was no ptosis.

Dr. A. B. Small, Dallas, Texas.—I shall not detain you long. I am fully aware of the objectionable features to presenting pathological specimens away from a laboratory; but I am going to beg your indulgence, since I have a very unusual specimen in connection with a most interesting case.

Patient L. F., thirty-two years of age, young farmer from near Blooming Grove, Texas, came into my service one week ago accompanied by one of his neighbors, who informed us that he was a hopeless epileptic.

The patient, who is thin, of a bad color and inclined to be melancholy, stated that his local physicians had informed him that there had been some favorable reports in the literature following an intestinal operation in epilepsy; and that he wished to take the operation if it offered any hope of a cure; if not, he thought he might as well take a shotgun.

The history of the case is, briefly, as follows: Constipated since he could remember; at the age of fourteen he began having spells of unconsciousness every few months, the attacks increasing in severity as the years went by, and the last four years they have been violent, coming on every ten days to two weeks, when he would have from one to twenty convulsions in twenty-four hours.

The attacks were invariably accompanied by a soreness in the abdomen which persisted until the bowels could be well emptied, an undertaking which at times proved very difficult. I frankly told him that I would not promise a cure in his case, but that I would assume the responsibility of the operation per se, and that I thought he could be benefited. He agreed to become a clinic for the Southern Medical Association, so that any member of this society who cared to do so might follow up the results of the operation

in the future. So this morning at the Baptist Sanitarium, in the presence of some of you whom I beguiled, we opened his abdomen to find a well marked developmental error.

The cecum and ascending colon in its descent from the subhepatic position in embryo had failed to fuse with the retro-peritoneum, a condition designated by Wilms as "Cecum Mobile," an error not so infrequent; but here the condition is complicated by having the terminal end of the ileum adherent to the retro-peritoneum at a point over the psoas muscle, where the cecum is shelved following a normal fusion and rotation, thus preventing the ileum from entering the cecum at right angles with the body from the left. The stricture caused by this strained position can readily be seen when I hold the specimen up thus. It is about five inches removed from the ileo-cecal valve, where the ileum enters the cecum at right angles with the body antero-posteriorly.

The caliber of this structure is about the size of a small lead pencil and was entirely covered over by the cecum. Just at this point, about eight inches from the ileo-cecal valve, may be seen a denuded area on the ileum. This is the point of origin of an ileo-pelvic band (Lane's kink), the attachment of which was found on the pelvic floor. This structure makes tension across the mesentary, drawing a segment of the ileum into a V shape.

Still farther removed from the valve and including all of that portion of the ileum which was resected, is a dilatation due to damming back of the ileal flow by these two breakers shown so clearly in this specimen; one an intestinal congenital deformity, the other a definite mechanical obstructive band. The two, combined, have played havoc with this poor fellow's life, rendering him a recluse.

The operation done consists of the resection of about fourteen inches of the ileum, the cecum and ascending colon, and the proximal end of the transverse colon over to the middle colic artery. The resection being circumvented by an end to lateral anastomosis of the ileum with the lower loop of the pelvic colon. I am not prepared to say just what effect this operation will have on the convulsions in this case, but my opinion is the evil spirits have been cast out of the man by a proper drainage of the alimentary canal. Whether this will prove true or not, I shall be glad to keep you posted as to results through the columns of the Southern Medical Journal.

Dr. Johnson Closes.—I asked the question if any one had seen a case of Jackson membranes or inflammatory veils without a visceroptosis. I heard an affirmative answer from Dr. Cohn and another. Seeing a case of membranes at the time of an operation would signify nothing if not previously examined with a fluoroscope in the vertical position. When I made the assertion that I had not seen such cases, I meant where I had made fluoroscopic examinations.

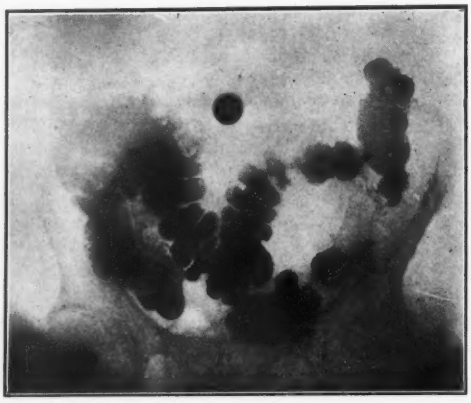
Dr. Cohn asked if I made the statement that a perfectly normal appendix would excite an ileocecal spasm. I made no such statement, but stated that an appendix which was kinked or adherent and showed none of the outward evidences of present inflammation will cause an ileocecal spasm. It is such an appendix which gives rise to the secondary stomach symptoms. In our limited time we can not go into the etiology of a kinked appendix.

I wish to show some skiagraphs illustrating an ileocecal spasm:

No. 1 shows the bismuth meal at the end of ten hours in the terminal loops of the ileum (the ileum should be emptied in nine hours). At that time he was given a full meal. No. 2 was taken forty minutes later, showing all of the bismuth in the cecum and first part of colon. When food is taken into the stomach the normal ileocecal

No. 1.
Bismuth Meal 8 a. m. X-Ray 6 p. m., 10 Hours After.

No. 2.
Bismuth Meal 8 a. m. X-Ray 6:40 p. m., 10 Hours and 40 Minutes.



No. 3.
Twenty-four Hours.

valve allows the contents of the terminal ileum to pass and in case of ileocecal spasm the spasm will be overcome by the same stimulus. Picture No. 3 shows the retrocecal appendix which was causing the trouble.

Let us remember that incising the intestines or peritoneum does not cause pain; that the pulling upon it causes intense pain. Also remember that the colicky pains in chronic appendicitis are not in the appendix, but are from the ileum dilating above an ileocecal spasm, thus causing an ileal colic. I think this explanation will prove to be true in the greater number of cases of chronic appendicitis.

PROTECTION AND CLOSURE OF INCISIONS.*

By R. M. Harbin, A.B., M.D., F.A.C.S.,
Rome, Ga.

Modern surgical technique has well nigh eliminated the question of mortality in elective operations, but surgical procedure, as frequently observed, has not reduced the period of morbidity to the extent in many cases that greater care and study would suffice to relieve, and from the standpoint of a spectator many of the larger clinics seem to ignore these apparently minor considerations, while delayed convalescence becomes of major importance to the patients; yet the outcome in the end being a satisfactory result. Haggard reports a death after an interval operation of appendectomy from skin contamination. (Southern Medical Journal, November, 1915.)

With this apology I would like to offer a few remarks from a clinical standpoint. In the average patient, after complete sterilization of gloves and instruments, the adjustment of face masks, etc., the successful issue of a surgical wound depends on (a) protection from skin infection, (b) thorough hemostasis, (c) approximation of tissues without tension or strangulation.

(a) It is manifestly impossible to sterilize absolutely any exposed part of a living organism without damage to the tissues. While not attempting a technical review of the question of value of the various methods of sterilization of the skin, it is probable that iodine furnishes a greater degree of sterilization than any other method, but a consensus of opinion admits that there is an element of danger from infection after this method, and any antiseptic sufficiently strong to sterilize the skin would produce contact damage to the intestines.

In the absence of an ideal method of sterilization of the skin, our energies should be expended towards obviating whatever dangers that may lurk after the usual methods of asepsis have been practiced.

Common observation warrants the statement that the ordinary protective measures by towels and hooks start off well, but usually break down before the completion of operations attended by tedious manipulations.

In view of this observation and experience we have devised a method by using ten or twelve safety pin towel hooks strung on two pieces of tape about two feet long for each side, and these hooks at short intervals anchor a single or double fold towels over the edges of skin and prevents not only skin contact, but protects the underlying fat from the trauma of manipulations. Fat having scant vascularity is very liable to necrosis and infection and should receive careful protection, especially in long incisions. The towel may be folded in the middle and anchored so as to conceal these hooks by having an assistant grasp edges of incision with a towel and then transfix the towel and skin with hooks. Then the

*Read in Section on Surgery, Southern Medical Association, Ninth Annual Meeting, Dallas, Texas, Nov. 8-11, 1915.

towel may be folded back and the cut edges of skin should remain invisible throughout the operation.

During the usual manipulations these pins, having rounded outlines and single hooks, may be rotated almost in any direction without becoming detached or causing any injury, and will not interfere with the use of retractors or manipulations with the whole hand in abdomen, which is not true of hooks having long handles. After some experimentation M. Wocher & Son Co., Cincinnati, made these hooks for me. (See Figs. 1 and 2.)

FIG. 1—SAFETY PIN TOWEL HOOK

It is well to discard the first scalpel after completing the skin incision. It is hardly excusable for a surgeon to puncture his gloves in routine work, but should such an accident occur, a relay of gloves should be on hand with a repetition of the process of hand disinfection.

The above method of protection may be applied in one or two minutes so as to make a complete coffer dam that should hold and not interfere with ordinary manipulations.

(b) Thorough hemostasis has been referred to as one earmark of a master surgeon because extended experience proves its importance in the prompt healing of wounds. Every bleeding point should be clamped and tied immediately or later as expedient. It is a mistake to assume that a small vessel will not subsequently bleed because it fails to appear after removal of the forceps, because when blood pressure returns to normal these bleeding points start afresh. The cat gut used for these small vessels should be fine and tied in single knots.

(c) There are two cardinal errors to be avoided in closing incisions, viz: Elimination of dead space and the prevention of tension and strangulation of tissues, and no routine technique will in every case avoid these alternate dangers, and we observe that many leading surgeons undergo perennial changes in their methods of closure. We would conclude that there is no one method that should be applied to all cases, but by bearing in mind these two dangers individual indications may be met.

Dead space is more liable to occur in thin, flaccid, or else in thick, rigid abdominal walls and may occur secondarily from recession of edges of layers because of straining at vomiting, etc., and for this class of cases a few extra-peritoneal through and through stay sutures of silkworm gut would be indicated, or else a figure of 8 suture of the same material may be made to include the edges of the sheaths of the recti muscle with a liberal face-to-face approximation with mattress sutures of chromic cat gut, which promotes capillary drainage of pent-up serum. This latter is more applicable to cases of thin abdominal walls, while the former is more suited to thick layers of fat, being careful to reduce tension of sutures as thickness of fat increases.

It is needless to urge that the trouble of pain and the danger of post-operative adhesions may follow the use of through-and-through sutures, including the peritoneum. Deep sutures when infected produce a more extensive phlegmon.

Any constriction or tension of the peritoneum is usually followed by pain, but where such is unavoidable I have practiced at the close of operation infiltrating a quinine and urea hydrochlorate solution as in puncturing the peritoneum in anchoring the round ligaments to the fasciae of the recti muscles. Closure of the peritoneum by a continuous cat gut suture with a liberal face-to-face approximatives causes little pain. Of course in a great many cases intra-abdominal pressure is sufficient to eliminate dead space. Cat gut, when depended on alone where there is tension, is not reliable, as it becomes soft in a short while and loses its tensile strength, but its non-irritation qualities make it an invaluable supplement.

Kangaroo tendon insures approximation for a greater length of time and has a certain amount of irritating qualities, but not to the extent of becoming actually offending. This is evidenced by a straw colored fluid which exudes about the eighth day, yet the wound may heal finally without further trouble. A wound

may actually suppurate without separation of the layers in the presence of this tendon, which finally becomes organized.

The troubles following malapposition of layers do not show up until about the eighth day and are evidenced by a discharge of bloody serum which does not necessarily become purulent and a secondary union may prove to be sufficient.

There is an art in the approximation of edges of skin that is difficult to attain, because the line of union should allow capillarity without forming any dead space from the accumulation of serum. For this reason I have discarded air-tight closures by metal clips, sub-cuticular stitch, continuous suture, etc. There should be liberal spaces between interrupted sutures, preferably of silkworm, so as to allow the edges of skin to fall together and at the same time admit of capillary drainage. This last row of sutures may be passed from within out and be made to include a moderate section of skin and tied loosely with three knots. After closure the incision should be brushed with half strength iodine and pressure pads of gauze be applied external to the incision and then dressed in the usual way. The perforated adhesive plaster bandage is more comfortable than the plain, especially in warm weather, and will not so likely cause dermatitis.

Tissue necrosis from tension and strangulation at times offers quite a serious hindrance to wound repair, especially in fat cases. The difficulty of avoidance of tension in the approximation of layers of old ventral hernia is at times almost insuperable, but by patient dissection and separation of layers, tension may be to a great extent avoided.

The problem of wound repair of fat tissue is one of peculiar difficulty because of scant vascularity with consequent tendency to necrosis and infection. For this reason deep sutures that include much fat are likely to cause necrosis, and the pressure caused by a blood clot may have the same effect.

When excessive, redundant portions of fat should be cut away, leaving surfaces fitted for exact approximation, and I have found that a method of suturing with a round needle threaded with fine cat gut, similar to the right angle suture method of Cushing, a very satisfactory way of approximation without constriction, making the first and last knots slack.

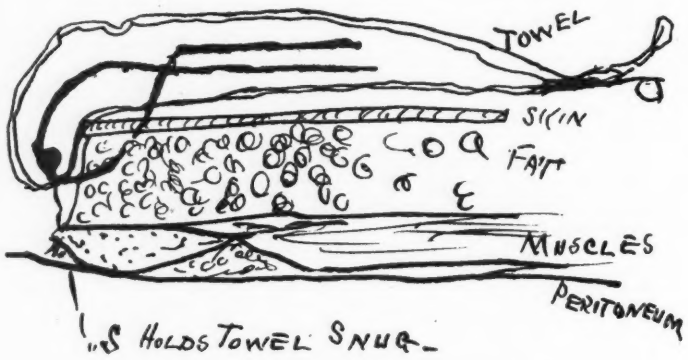


FIG. 2—CROSS SECTION OF COFFER DAM
(Diagrammatic)

SCARS.—The importance of a good scar is stressed in fat cases, because of gravity tension, and it is desirable for that reason that the skin scar not to be adherent to the line of union of the muscular layers, which would not be weakened by traction when in the upright position. Any subsequent sensations of stinging pains in scars indicates the first stage of development of hernia.

AFTER-TREATMENT OF ABDOMINAL OPERATIONS.*

By Louis Abramson, M.D., F.A.C.S.
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Careful attention to the details of after-treatment of abdominal operations will not only leave a better impression in the patient's mind, but will also tend to eliminate some of the preventable disasters of surgery. As Todd well says, the patient's "impressions of modern surgery will be derived partly from the ultimate result of the operation, but chiefly from the way in which the after-treatment is carried out by the surgeon and all his associates." The main purpose of this paper is to stimulate an interest in this important phase of surgical practice.

Operative technic is taught fully in the surgical clinics and in surgical writings, and while pages are spent in describing the work in the operating room, but a few lines are sufficient to explain all the details of the after-treatment. One of the golden rules of the post-operative treatment is not to do too much, but what is to be done should be done at the right time and in the right manner. Like all other branches of surgery, it can not be acquired from text-books or lectures, but must be learned at the bedside; therefore, the surgeon who is the most assiduous in his attention to his patient and who is a careful observer, will acquire a greater skill in this branch of his profession and will achieve a greater number of recoveries, and will obtain the affection of his patients, although otherwise he may be less skillful than others.

The after-treatment of abdominal operations may be conveniently grouped under seven heads, as follows:

1. Stimulation.
2. Relief of pain.
3. Food.
4. Cathartics.
5. Position.
6. Removal of stitches.
7. Complications.

*Read in Section on Surgery, Southern Medical Association, Ninth Annual Meeting, Dallas, Texas, Nov. 8-11, 1915.

1. Stimulation.—If the operation has not been unduly prolonged and the patient's condition is good, no stimulation is required. The routine administration of such drugs as strychnine and digitalis is to be condemned. If anything is good as a routine practice, it is the administration of a pint of either hot normal salt solution or the same quantity of hot tap water given by enema; this, if necessary, is to be repeated in three or four hours. This procedure lessens thirst, helps flush out the system and assists in the elimination of the anesthetic. However, no routine treatment should be adopted either in the administration of stimulants or in any part of post-operative treatment, but every patient should be treated fairly and squarely on his condition and the symptoms presented.

2. Relief of Pain.—This, perhaps, should be the first indication. As soon as the patient begins to recover from the ether and begins to toss about or complains of pain, an 1/8 or 1/4 grain of morphine sulphate should be given by needle; this is to be repeated in from four to six hours if required, and if the operation has been done in the morning, if necessary the morphine should be repeated at night in order to secure a good night's rest for the patient. After the first twenty-four hours, if the pain and discomfort persist and the vomiting has ceased, aspirin 5 grains given every four to six hours seems to have some anodyne effect and in the ordinary case will do no harm. On the second night a suppository of veronal 15 grains will usually quiet the patient and put him to sleep. This is one drug that seems to have a better effect when given by the rectum than when administered by the mouth. However, if this fails to have the desired effect 1-12 to 1-6 of heroin should be given.

Since pain for some hours after abdominal operations is largely caused by rough manipulation and too severe retraction, a proper operative technic will avoid much pain, but can not prevent all of it. For if a simple incision in the finger, made accidentally, will cause pain for hours, why should not a much larger incision in the abdominal wall cause pain from the incision alone?

Since the introduction of Crile's Anoci-

association pain after operation has been considerably reduced, but the method in my hands has not always been successful; and some persons' susceptibility to pain is so much greater than others that a small amount of pain will cause a great deal of discomfort, more, perhaps, after an abdominal operation than any other condition.

3. FOOD.—As soon as the patient recovers from the anesthetic, if nausea is not too persistent, water is given and but little more for the first twenty-four hours, although there is no rigid rule in this regard. Often it is well to follow a patient's inclination in regard to nourishment, and liquid nourishment desired may be given in the first twelve hours after operation, provided the stomach has not been operated on or a resection of the intestines done. It is to be borne in mind that intestinal wounds are supported for the first three days by the sutures; on the third to the fifth day, which is the weakest time, the sutures loosen somewhat and the parts are held together by a weak union; from the fifth day on the union is firmer, until by the ninth day it is complete. After the first twenty-four hours liquid nourishment is commenced; soft diet given after thirty-six hours, after which the food is increased each day until soon the patient is upon a normal diet.

4. CATHARTICS.—The bowels should be moved daily by an enema of soapsuds and water; on the third day a high enema of glycerine, spirits of turpentine, Epsom salts and water is given, which usually gives a satisfactory result; if the symptoms are good no purge is given until the third or fourth day, or even later. A dose of magnesia sulphate sufficiently large to produce two or three watery actions is usually sufficient.

In those cases in which drainage has been used it is sometimes advisable to wait longer before giving a purgative.

5. POSITION.—The recumbent position for the first few hours, after which the patient should be propped up in bed or the head of the bed elevated. I have found this to be an excellent practice even where there is no drainage. When the patient persistently refuses to be propped up, his position should be changed at few hours intervals by the nurse. After all operations upon the upper abdomen, if the patient is placed in semi-sitting position, a much smoother after course will be seen than if the patient is allowed to remain flat.

6. REMOVAL OF STITCHES.—The dressing is not disturbed until the ninth day, when the stitches are removed and the patient is gotten out of bed and he is allowed to leave the hospital between the tenth and fourteenth day.

7. COMPLICATIONS.—Given a clean laparotomy in which no operation has been done upon the intestinal canal and in which the patient has been properly prepared and the wound has been properly made and sutured, the after course should be as uneventful as an operation upon any other part of the body. Vomiting, the most common complication, can often be prevented by proper attention to the anaesthetic. Most of the remedies used for this condition are useless. The mild form passes off in a few hours; when it does not, gastric lavage is the one expedient that gives the most success.

Distention is still a frequent complication of laparotomy. An efficient preparation and correct and rapid work in the operation will prevent much of it. In such cases where it does occur it is carefully watched and is relieved by enemata before distention has occurred. Several drugs may be used to advantage. Eserine sulphate given hypodermically in 1-50th grain doses, repeated every four hours, seems to have decided and direct results in stimulating peristaltic action of the bowels. Pituitary extract in 1% solution doses sometimes gives excellent results. An alum enema consisting of 1 quart of water in which a tablespoonful of alum has been dissolved will succeed in bringing away the gas unless paresis is complete or an obstruction exists.

Shock is treated as in any other condition.

Nephritis and pneumonia are rarely met with and may be avoided in most cases by proper attention.

If the patient has lost a large amount of blood or is anemic from long sickness he has to be watched very carefully, for these are the cases in which most complications occur and in which healing is delayed.

A catheter should not be used in most

cases for about thirty hours after operation; and the patient as a rule will regain use of the bladder within that time.

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DISCUSSION.

Dr. Thos. Ragan, Shreveport, La.—I thoroughly approve the treatment suggested by Dr. Abramson. After a complete operation the patient needs only to be let alone.

I would call your attention to some points applicable not alone to surgical, but to medical cases as well. The onset of certain surgical diseases and accidents, such as appendicitis, gunshot wounds of the abdomen, etc., suddenly interrupt normal metabolism. The intake of food ceases, yet while life lasts there is an irreducible minimum of energy which must be found to carry on the vital physiologic processes.

The stored-up glycogen can do this for a short time only—less than forty-eight hours. After that the body tissues are oxidized to furnish the fuel. The total energy needs of the body can not come from this source without leaving certain poisonous by-products that circulate as acids in the blood. Alkaline glucose solution in the bowel saves the tissues from oxidation and adds the fuel needed for physiologic purposes. Glucose should be administered by the method of Murphy when food has been previously withheld, or in the many conditions when it can not be given after operation.

Glucose intravenously is second only to transfused blood as a stimulant, and is available when blood transfusion might not be.

This simple means of adding tissue-saving fuel is too little appreciated. It should be remembered as having a value in surgical practice along with the Fowler-Murphy treatment.

Dr. Southgate Leigh, Norfolk, Va.—I wish to bring up one point that has been mentioned already, and I would like to see this Section take it up, discuss it briefly and put themselves on record, and that is the question of allowing patients to leave the hospital too early. Gentlemen, it is causing the surgeons more trouble today than anything I know of. I personally believe that no laparotomy case, however slight, should be allowed to leave the hospital under fourteen days. If possible, and you gentlemen agree with me, I would like to see a resolution passed making a minimum time. I do not think we ought to criticise the men who are allowing patients to go home early and criticise their motive, but I do say it is causing trouble in two ways. The patients who go home at any time under fourteen days are having trouble; and, in the second place, they are causing the rest of us trouble, because, as was mentioned this morning, they are making a bad impression on the public.

I think it is a very important matter and that we ought to consider it thoroughly, and I hope that you gentlemen will feel it proper to put this Section on record as to a minimum time.

Dr. F. G. DuBose, Selma, Ala.—In reference to the post-operative pain I wish to give you something which was handed to me by Dr. L. L. Hill, of Montgomery, some years ago in regard to the administration of morphine:

15 grains Aspirin.
½ oz. Whiskey.
Water of sufficient quantity to make 3 oz.

As a stimulant during the course of operation, I wish to emphasize again the use of distilled water. It is better than normal saline. It is absorbed more rapidly and prevents more quickly the drying out of the tissues. Then, afterwards, intravenously, soda and glucose solution afford the best heart stimulant and the best energizing nutrient at hand. Any one who knows pharmacology will not use atropine, morphine and pituitrin as they are indicated.

For moving the bowels on the second, third or

fourth day nothing is equal to equal quantities of milk and molasses as an enema. It is the best and safest purgative known. I would warn against too early an administration of purgatives by the mouth; they are trouble-makers and serve very seldom a good purpose.

Dr. Harris, Waco, Texas.—One of the first things is to take care of the liquids. The majority of our patients have an insufficient amount of liquids when they go on the table, and if we are not careful they will continue that way. My method is to give them by mouth as soon as they can take them. I believe one of the first things is post-operative liquids, and they take it the first time and then vomit and go on, then, and take the liquids. I believe if we will use liquids more our patients will do better.

We should keep our patients as comfortable as possible every way, and every man who has ever had his abdomen opened and had a line of sutures knows that they often become exhausted from lack of sleep and proper rest, and as much rest as possible is very essential.

As to purgatives, I think we have all been almost criminal in them: in the too early and too anxious administration of purgatives. Often it is not only a bad practice, but injurious to our patients. Frequently a stomach lavage and an enema is all that is necessary to relieve pain, and often have I seen vomiting and increasing peristalsis, etc., by giving a purgative.

Dr. Abramson Closes.—Mr. President, the time is late, so I will not take up any more time. I thank the gentlemen for their discussion.

THE PRESENT STATUS OF THE OPERATION OF GASTRO-JEJUNOSTOMY.*

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The operation of gastro-jejunostomy has now been practiced long enough that it has perspective — that is, we can fix values approximately correct. In its evolution the usual swing of enthusiasm attending the introduction of all procedures of value has been unusually pronounced, carrying it far beyond legitimate bounds. Twenty-five years ago everybody who essayed surgery at all was removing normal ovaries for all kinds of real and imaginary troubles. Less than ten years ago the same condition obtained with respect to the operation under present consideration. We were seeing ulcers in every irregularity of the overlaying serous membrane. Embarrassing sequellae due to imperfect technique, faulty diagnosis, etc., were bound to, and did follow, and demand pause.

The writer was much impressed with a recent utterance of W. J. Mayo, made in one of J. B. Murphy's recent clinics: "One of the reasons for the bad results which often follow the operation of gastro-jejunostomy is that the patient did not have the ulcer, but did have the operation." The results of gastro-jejunostomy when performed in a technically correct manner, and in order to meet the indications of a correct diagnosis, were so brilliant that it was soon being applied by operators everywhere to every patient complaining of digestive disturbances. Chronic appendices, gall bladders and pelvic lesions, each of which had in turn suffered the "furor operativa," were overlooked in the mad scramble to do this new cure-all. Very human men study medicine and eventually evolve or retrogress, as suits your point of view, into surgeons, some very quickly, overnight, as it were, others by a more tedious though perhaps safer and surer route. There is no hocus-pocus or mysterious alchemy by which human nature is changed the instant the M.D. is acquired.

Practically all the failures in the operation may be based upon those things having to do with the operation itself on the one hand, or in dealing with diagnostic errors on the other.

I. THE OPERATION ITSELF.

It is now well settled that certain definite principles must be followed, not only in order to secure good results, but also often to escape direful sequellae.

(a) The posterior loopless is the operation of choice.

(b) The implantation is to be made as near the pylorus as is consistent with conditions.

(c) The operation by itself is at times inadequate to meet the indications which may exist, and in such instances must be associated with some other plastic procedure.

(d) The operation must be made technically in such a manner that no obstructive folds or

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jejunal kinks occur, either proximal or distal, to the anastomosis.

(e) Non-absorbable sutures are not permissible for the inner row (W. J. Mayo).

The unfavorable results following may be briefly summarized as (1) immediate and (2) remote. The former are often tragedies.

The dreaded so-called "vicious circle" may exhaust the patient by slow starvation. Bile regurgitation may overwhelm. Hemorrhage is frequent enough to be a source of anxiety during the first twenty-four hours after operation. In something over two hundred operations I have had to re-operate once for this accident. Let it be understood that this is not the only post-operative hemorrhage I have had in this operation, but the only one so grave as to require re-operation.

A properly performed posterior loopless operation has vanquished practically all of the immediate dangers mentioned except hemorrhage. This by any stitch yet devised is still frequent enough to be feared. With the inner row of the lock or button-hole variety, if placed carefully to surely include *all* the coats, the posterior line is not likely to cause us trouble. The writer depends on this stitch in a most wide variety of operations for hemostasis as well as coaptation with great satisfaction. In placing this stitch, my rule is that the distance between each shall just equal the entire thickness of all the coats through which it passes. No. 0 formalized gut is the suture of choice for this row. But this stitch is not applicable to the anterior row. The "in-out-over" of C. H. Mayo, while the best stitch so far devised for this row, is far from perfect from the standpoint of hemostasis. In its application the "bight" must not be too large. In the only case I reopened for hemorrhage I found it along this line. Since then I have made it a point in technique to secure all recognizable vessels leading to this line with an extra ligature outside the suture line and always to loosen the forceps so as to reveal bleeding points before placing the sutures. Since paying attention to these details, this embarrassing and dangerous complication has been absent in my work.

Monyham lays great stress upon laying the bowel with its long axis transverse to the long axis of the stomach. Mayo places it obliquely from right to left. It would appear that that positioning would be best which more nearly corresponds to the natural relation the viscera bear to each other when at rest. This differs within limits in each case. Specifically the relative position for each case can be readily ascertained by lifting the transverse colon and inspecting the bowel before lifting it. Any application outside of this favors kinking and angulation and consequent bile regurgitation and gastric stasis.

The anastomosis should be made as near the pylorus as is consistent with the nature of the case, for the reason that the fundus is relatively weak in peristalsis and functions as a reservoir while the pylorus has a powerful musculature and acts as a mixer ejecting its contents in jets. Hartman* has shown that an opening placed in the fundus tends to early spontaneous closure, while one in or near the pylorus persists and functions well with or without pyloric occlusion.

Probably herein lies the reason for many failures. Probably here, too, lies the influence that has set so many able surgeons to the task of finding a means of pyloric occlusion that would not add materially to the danger of the operation. The brilliant results so often following the operation in cicatricial pyloric stenosis gave an added zest to the search. The great name of Von Eiselsberg has thrown a glamour over the procedure. I, with many others, adopted for a time this alluring device, but was bitterly disappointed in the result.

Pyloric occlusions acted as a shield to the operator when these disappointed patients afterwards fell into the hands of another surgeon. As Mayo very tritely says, the surgeon "proved his alibi in advance" so far as the later demonstration of ulcer was concerned.

Simple gastro-jejunostomy is at times inadequate to deal with the pathology present. Even though we may believe with Patterson that the benefit is largely chemical and due to the alkalinization of the hyper-acid contents of the ulcerated stomach, or with Charles Mayo that the benefit is largely a matter of drainage,

*Archives des Maladies de l' App. Digestif.

the fact remains none the less true. In duodenal ulcer experience teaches that a technically correct gastro-jejunostomy without any sort of pyloric exclusion is an almost ideal procedure, but an ulcer, a *demonstrable ulcer, is necessary to insure* this success. When we come to the location of the ulcer it may be said that the success of the operation is proportioned to the nearness of the ulcer to the pylorus. In many of the cases the operation is supplementary to a resection, aside from the question of carcinoma.

W. H. Mayo has most emphatically called attention to the proneness of non-absorbable sutures when used in the inner row to dangle in the bowel lumen for months and cause secondary jejunal ulcers often referred to as peptic. Aside from his great experience, the fact that the condition was demonstrated in re-operations gives this statement all the weight of authority.

II. DIAGNOSTIC ERRORS.

Notwithstanding the positive statements of experienced surgeons to the contrary, and notwithstanding laboratory and X-ray, in the main my experience bears me out in the statement that the only absolutely dependable diagnosis of ulcer is made on the operating table. Even with the abdomen open, many errors have been made both ways, i. e., diagnosing an ulcer when such did not exist, and the contrary.

The persistent hyperchlorhydria upon which Monyham lays such stress may exist as a symptom of a chronic appendicitis in the absence of ulcer and be at once and permanently relieved by a simple appendectomy, as I have often proved at the operating table. The mimicry of ulcer by gall bladder, appendix and pelvic conditions is familiar to every experienced surgeon. Oftentimes, too, unless there is marked induration about an ulcer, it can not be diagnosed by the sense of touch from a lower incision. *Direct inspection* is our most reliable means. At the present time, if inspection and palpation leave me still in doubt, I do not hesitate to lay the organ open freely to inspect from the mucous membrane side. It is just this difficulty of diagnosis in a certain percentage of cases that has led to so many failures in the operation of gastro-jejunostomy, "the patient did not have the ulcer, but did have the operation." Many a patient has had a gastro-jejunostomy done for an intestinal stasis, a chronic appendix, etc. Oftentimes the converse is true.

I am not assuming the role of "accusing angel," for I, too, have erred. I am pleading for the exercise of greater care, for the bravery that will close an abdomen without doing anything when the indication to do something is not clear.

606 *State National Bank Bldg.*

AUTHOR'S ABSTRACTS.

Surgery, Gynecology, Obstetrics and Genito-Urinary Diseases.

The Modern Treatment of Burns. By T. J. Tuder, Keokee, Va. International Journal of Surgery.

Fire-proofing the clothing of children, flimsy draperies used in pageants, carnivals, receptions, etc., after method recently introduced by Dr. Charles F. Pabst, Brooklyn, by adding one pound of ammonium phosphate to one gallon cold water and soaking the fabric in this for five minutes is an important step in prophylaxis, as is also campaign against universal open grate.

Shock of severe burns demands first attention by usual methods, and if area not already sterile from infliction of burn, cleanse with normal saline, hydrogen peroxide, or if very dirty with benzine followed by alcohol.

Carron oil is a filthy old-time dressing now out of date.

Various ointments still popular, ichthyol and boric ointments representing the best, but all ointments are frequently far from aseptic, macerate tissues and facilitate germ growth, or if antiseptics be incorporated in them in sufficient strength to prevent this, epidermatization is interfered with.

Solution of bicarbonate of soda, normal saline, and saturated aqueous solution picric acid are the best moist dressings, and paste made by adding boiled water to sodium bicarbonate ever available home remedy which should replace filthy salves and oils now so commonly used.

Open air treatment is best for all burns in hospitals and homes where reasonable cleanliness may be maintained.

Anaphylaxis from continuous absorption of toxic products from burned area often fatal in second or third week.

Eliminative treatment, keeping skin, kidneys, and bowels in best possible condition and patient on easily digestible foods with an abundance of liquids imperative in severe burns.

RAILWAY SURGERY

THE IMMEDIATE AND AFTER-TREATMENT OF RAILWAY INJURIES.*

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The prompt treatment of railway injuries comes under the general designation of urgent surgery. So much has been said, written and done concerning first aid to the injured in corporate civil practice, as well as in military life, that it is needless to dwell at length on this phase of the subject on this occasion. Its importance and necessity are generally recognized.

Railway injuries generally are correctly defined as contused, lacerated and mangled, and much more prone to infection than smooth and cut wounds. They therefore demand more skill, care and detail in treatment and management. The intrusion of dirt, clothing and splinters into such wounds is common.

The circumstances, conditions and environment are unfavorable to the best treatment; so tentative measures, such as the external application of peroxide of hydrogen and iodine with dry sterile gauze is usually sufficient until the patient is in a hospital, or under conditions at least more favorable to clean dressings, proper surgical treatment and consequently prompt healing of wounds.

In case of fracture of the extremities, some temporary fixation dressing to prevent angulation at the seat of injury is essential to the safe and more comfortable transportation of the patient to place of permanent treatment. Severe or continuous hemorrhage is about the only condition which would justify immediate exploration on the spot in order to arrest grave impending danger. Probing is seldom justifiable under any conditions.

Meddlesome surgery—the pretentious effort of doing something without sufficient knowledge of the nature of the injury, and without adequate preparation, is nothing less than surgical affectation, though it may be well intended. With the conditions surrounding these accidents, and especially those attended with hemorrhage, unconsciousness and shock, the encouragement and the temptation to do something positive or effective at *once* is very great. There are few, if any, conditions more trying to the necessary self-control and balanced judgment of the surgeon; and if he is inexperienced, none in which he is more likely to adopt an unjustifiable procedure, due to what he imagines is expected of him amidst the confusion and embarrassment of unfavorable conditions and environment. Unnecessary medication and premature operation are the too frequent result.

As a rule, severe railway injuries are of such a character and nature that hemorrhage, though severe for a moment, soon ceases. The lacerated intima retracts and the lowered blood pressure soon results in localized thromboses, which are conservative in effect. Very tight bandaging to a badly damaged extremity is usually unnecessary, and an elastic bandage to prevent or control bleeding is dangerous to the integrity of the limb and to the constricted part for the use of flaps if amputation should be necessary. This bandage, if used for but a short time even, invites tissue necrosis and subsequent sloughing of the parts.

Shock is probably more unfairly and unscientifically treated than any other emergency condition incident to railway traffic. Whether it is due to the vasomotor exhaustion theory, or to the more recently accredited theory of biologists—Hadane, Porter and Yale Henderson—of a deficient dioxide content of the blood, is of little practical interest to the average railroad surgeon. He knows, doubtless, that the blood pressure is dangerously low and the blood stagnant in the venous trunks and capillaries. The practical question is, how *is* the condition treated, and how *should* it be treated? No man can possess surgical judgment unless he knows when to operate, when not to operate and how to operate. Mere technic, however fascinating, is mechanical art, but by no means the summum bonum of surgery, and may be devoid of

*Read before Southern States Association of Railway Surgeons, Auxiliary to the Southern Medical Association, Dallas, Tex., Nov. 8-11, 1915.

both skill and judgment as to the necessities and principles involved. Shock too frequently is not treated at all, but the patient is rushed to the hospital, where an amputation or severe operation is done while the patient is still in severe or profound shock, with the result that some never recover consciousness, and others, after a doubtful struggle, finally react. Skilled surgeons, if they do not witness, are at least cognizant of such occurrences every year in the corporate operations of the country. Strange as it may seem, there are many men doing surgery who do not seem to realize the importance and necessity of securing good, substantial reaction before performing severe and capital operations.

Some learn little from books, teachers, instructions, and even experience, in this class of cases. The useless and unnecessary sacrifice of life is my excuse for speaking plainly concerning it.

Dry heat to the body — hypodermoclysis — and rectal saline and sugar solutions are safe and conservative methods that should be used before any patient in shock is subjected to anesthesia and operation. In case of much loss of blood, only, is blood transfusion necessary. Hemorrhage induces collapse and intensifies and prolongs shock.

If the injury is abdominal, with or without laceration of the wall, and shock is profound and protracted, rupture of viscera or slow, continuous hemorrhage is probable. An anesthetic under such conditions is not only extremely hazardous, but too frequently fatal. When operation is imperative, in order to save life, under such conditions, local anesthesia is the method of choice—with nitrous oxide and oxygen in reserve. To give a general anesthetic, as I have reason to believe is not infrequently done, especially in bad wounds of the extremities and within the abdomen with the patient in severe or profound shock, is indefensible. To add surgical shock to that of injury will hasten and may determine the fatal issue.

In case of fracture of the long bones, the immediate consideration is fixation. If it is a closed fracture, the ordinary dressings by splints and extension in the hospital will usually be sufficient. If the fragments can be adjusted without operation, it is better not to operate. All direct methods of fixation in acute fractures retard osteogenesis, prolongs convalescence and undoubtedly increase the risk of infection. If the fracture is an open one, it is not, today, considered advisable to use any direct fixation appliance to the fragments under ten days or two weeks, even if necessary, nor then, I would suggest, if the fragments are in good apposition with little or no overlapping. No matter what method is used, scrupulous care should be given to the line of axis of the limb. Casts should not be used until after the immediate swelling has subsided. Silicate of soda solution makes the lightest and neatest of all casts. The fact that it dries more slowly than plaster of paris is not a serious objection in most cases. If extension is deemed necessary, it can be applied to the limb before the cast is put on and maintained temporarily or permanently as desired. When reasonably good adjustment of the fragments can not be had or maintained by the methods suggested, then it may be advisable to resort to one of the methods in general use, such as Lane plates, clamps, chromic gut, or wire; or, now, the autogenous bone graft, which is rapidly coming into favor. In my opinion its chief place and value is in delayed and non-union. It is undoubtedly a better stimulus to osteogenetic action and has the distinct advantage that it is not a non-absorbable foreign body, and, consequently, is not likely to have to be removed on account of infection.

Mangled feet and hands and fingers from car wheels and bumpers in coupling and uncoupling of cars and in braking is a common occurrence, notwithstanding "safety first" instructions. There is no more urgent field for skillful, conservative surgery than in these injuries. The loss of a hand, or the index finger and thumb especially, is as serious to the laborer as it would be to the surgeon. Besides the need of preservation, it is a costly loss to both employee and employer. Lacerated tissues are more liable to infection, more dangerous, and heal more slowly. It is necessary to preserve intact by anastomosis when severed of tendons, and nerves whenever possible, using such plastic procedures as each case may demand. With careful attention to drainage, to cleanliness and to detail in the

daily dressing and management of these cases, surprisingly good results are frequently obtained. They are hospital cases from the first aid dressing to the conclusion. Such wounds of the extremities, involving muscles and tendons, require early passive motion in order to prevent fixed adhesions, and in consequence impaired motion and function.

To a damaged blood vessel of consequence, compression is a temporary expedient only; usually first aid or during reaction from shock, or while being transported to a hospital. The final treatment should be, if equipped for it and conditions are favorable, preferably suturing the vessel end to end, or the older method of ligation of both sides of the injured vessel. The first consideration would apply to such vessels as the axillary, the brachial, the femoral and popliteal.

It is bad surgery to sew up torn and lacerated wounds, though it is not infrequently done on the spot. It is a sure harbinger of infection, and the work will have to be undone. The open method with free drainage and the application of hot sterile solutions is best and safest until the blood supply is assured. As long as the chief blood and nerve supply are intact, the member can usually be saved, regardless of fracture and considerable laceration and contusion of muscles and tendons. More skill and surgical judgment—more patience and time—are required for the successful treatment of such injuries than in those which are so self-evident in character as to imperatively demand only one course of procedure. No operations are more successful than the anastomosis of muscles, tendons and nerves. Infection being more common in these injuries, imperils every effort that is made for the regeneration of damaged tissues and the preservation of most useful parts and members, while complete functional repair as modern surgery skillfully administered could effect is most important. The prevention of infection is, therefore, the first requisite and it is often determined by the first treatment as well as by the nature and circumstance of the injury.

Scalp wounds, however extensive, are not usually attended with severe shock and heal primarily, kindly and promptly.

The most insidious and dangerous injury to the skull is a small punctured fracture. It is peculiarly susceptible to infection and to be followed, at a later date, by brain abscess and its evil consequences. Every such wound demands early exploration and the removal of all fragments of bone and debris, or serious results are likely to follow.

Fractured ribs with punctured lung and pneumothorax present a dangerous condition that requires absolute rest and the most conservative management.

I have endeavored to consider only some of the most important accidents incident to the operation of the railway service. They should receive full and fair investigation and the best treatment at the hands of the surgeon in order that impartial justice may be rendered the patient, the employer and the medical department, which shares the obligation and the responsibility.

DISCUSSION.

Dr. W. L. Brown, El Paso, Texas.—I do not think any improvement could be made on that paper. I think it is one of the best papers I have ever heard on the subject. I think it would be too bad, after the doctor came such a great distance to read such an excellent paper, for us not to give it any discussion at all.

Several of the points are a little different from anything we have had today and are well worth our consideration. Knowing Dr. Grant to be a fine and conservative surgeon, we can follow his advice on almost any subject.

The transplant of bone interested me. Of course we know that that is for delayed unions and ununited fractures. In other words, that the bone transplant is not to be used as a mechanical appliance for the holding of bones in position. A bone transplant will not resist a continued effort at displacement, because one of the things that happens to the transplant is that as it becomes vitalized it becomes soft and a continued effort at displacement will finally pinch it in two.

EYE, EAR, NOSE AND THROAT

OPERATIVE TECHNIQUE OF LATE TRAUMATIC CATARACT.*

BY E. R. CARPENTER, M.D.
El Paso, Texas.

The writer wishes to direct your attention to an operative technique which, in his experience, has given more satisfactory results in the treatment of traumatic cataracts than has been obtained by him by the use of any other technique.

Injured eyes of this nature present various forms of complications, and no stated operative method is suitable for all the variations of this condition. However, in the majority of cases where light perception is good, and where inflammatory reaction has subsided, the lens substance consists of a soft, opaque, unorganized material, or of a more or less thickened whitish membrane, which may be removed with some degree of certainty. Usually in these cases a foreign body has penetrated the cornea with sufficient force to injure the capsule of the lens, while the iris is involved either through direct traumatism or by inflammatory adhesions.

Operative interference in this class of cases is frequently accompanied by serious loss of vitreous from manipulation, gaping of the corneal wound with long delayed healing, or by secondary infection and loss of the eye. With the hope that these difficulties might possibly be decreased, the writer opened the anterior chamber in a series of twenty such injured eyes by making the corneal incision immediately behind a conjunctival flap, which flap was sutured back in place as a final step in the operation. This flap was procured as in the Elliott operation for glaucoma, except the conjunctiva was not dissected beyond the limbus.

The corneal incision was made with a narrow, double-edged knife, and included from one-fourth to one-third of the corneo-scleral circumference. After removing all traces of blood, if necessary, from the anterior chamber by irrigation, adhesions were cut between the iris and the old cornea wound, or between the iris and the lens. When lens substance was found

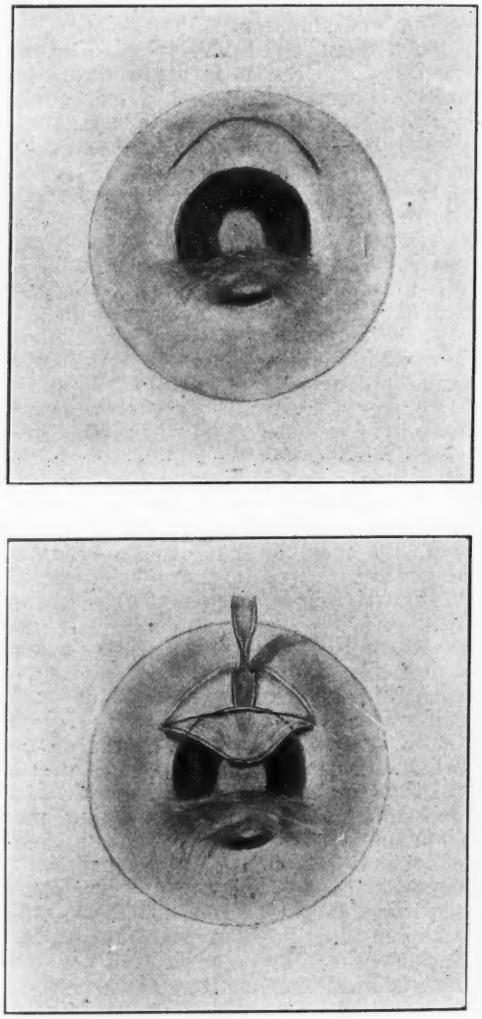


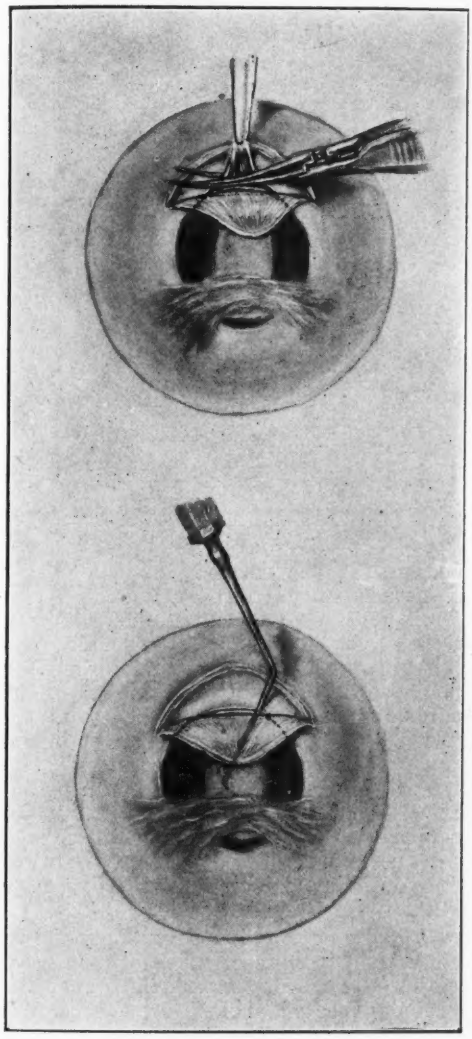
Figure 1.

within the capsule the systotome was used, after making an iridectomy, which was necessary in most cases.

The soft lens material was removed in all cases by irrigation, using for this pur-

*Read in Eye, Ear, Nose and Throat Section, Southern Medical Association, Ninth Annual Meeting, Dallas, Texas, Nov. 8-11, 1915.

pose a dental syringe, to which was attached a fine anula bent at a right angle. With this instrument a steady stream of warm saline solution could be maintained



Figures 2 and 3.

and directed as desired. Occasionally it was necessary to cut up and curette a portion of the lens. While using the syringe the opening into the anterior chamber was distended slightly by means of a small spreading forcep, or by gently pulling the anterior lip of the wound forward with a suitable hook. Where the cataracts were of a membranous nature the usual means for removing this form of cataracts were employed. The toilet was made as in other operations of like nature except, as stated, the conjunctival flap was sutured back into place, which insured a good approximation of the corneal edges and a rapid elimination of the danger of complications.

A slight loss of vitreous was unavoidable in a few cases, but, notwithstanding, the incision healed nicely and rapidly in all cases. In one instance the eye appeared hopelessly lost from serious collapse of the cornea and sclera, yet in four or five hours the eyeball had regained its former fullness. There was no infection in the twenty cases and but little pain was experienced by most of the patients. Discision of the capsule was necessary in some cases where considerable lens substance was present at the time of operation.

Useful vision was restored in seventeen of the twenty patients treated. Three of the twenty eyes need further attention, with the probable loss of two of these three from iridocyclitis and vitreous changes.

All patients were up and around in from one to three days and several resumed their duties at the end of a week. With the exception of one young girl, these patients were adults; some were soldiers and officers in the Mexican revolution, while the others were miners and mechanics. Eighty per cent of the operations were performed at a period varying from six weeks to six months after the primary injury. Less reaction was experienced in the early operations, but more difficulty was met with in removing the lens material in these cases. The early operations were performed soon after the inflammatory reaction had subsided, and nature's forces were readily brought back into activity, although in some of them only partial deterioration of the lens fibers had yet taken place.

The technique under consideration was not attempted in any eye at the time of injury, as the incision is not suitable for lens extraction by expression. The anterior portion of the cornea in this incision is less yielding than is the scleral portion, consequently the exit of an intact lens

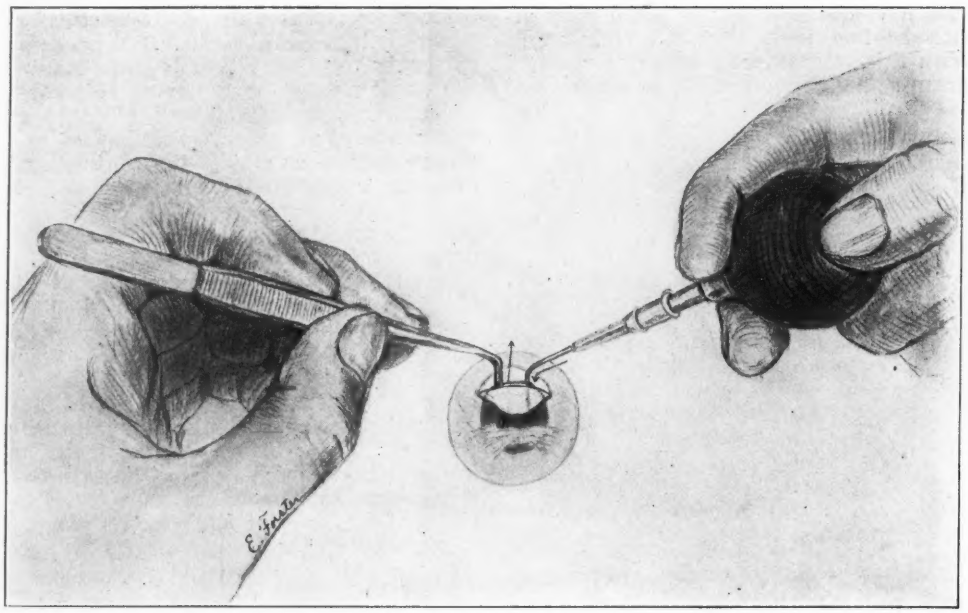


Figure 4.

through such a wound would greatly endanger rupture of the zonula.

With this incision all parts of the anterior chamber are easily reached and less danger arises from internal manipulation of the eye than when the usual corneal incision is made. A better conjunctival flap is obtained by this technique than when the flap is made along with counter puncture of the cornea. Sudden escape of intraocular fluid under increased tension is not likely to occur in this technique, while at the same time it is usually possible to make a satisfactory iridectomy for such cases. However, the most important feature of the technique is the advantage gained by the conjunctival flap in immediately sealing up and protecting what is otherwise a dangerous wound in a pathological eye; an eye that often taxes the recuperative forces of a patient threatened with permanent blindness and requires of the opthalmologist his greatest operative skill in order to restore vision.

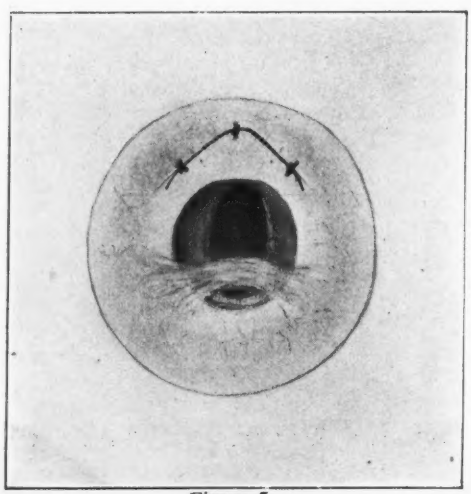


Figure 5.

No claims for originality are made in this article in respect to the general operation described, but certain features herein advocated are not in general use in connection with traumatic cataract work, and the writer believes that a more extended usage of these features would insure better results than are obtained by the usual methods employed in this branch of surgery.

Note: Since presenting this article, I have used the above technique in many similar cases with even better results than primarily claimed.

LOCAL ANESTHESIA IN CONJUNCTION WITH GENERAL ANESTHESIA IN MASTOID OPERATIONS.*

By T. W. Moore, M.D.
Huntington, W. Va.

Every otologist has had patients suffer intensely when recovering from the anesthetic after a mastoid operation. Sometimes it is an intolerable aching, at other times a burning or smarting, and again the patient will say "the awful soreness in my neck."

That all that can be done to avoid or lessen the post-operative pain and make our patients comfortable when coming out from the general anesthetic is our imperative duty here as in the other fields of surgery, I think is conceded by all. So if by spending a few additional minutes in preparation our patient, after the general anesthetic passes off, goes into a quiet and restful sleep for from one to three hours, much has been accomplished.

I have purposely omitted any reference to that complex and little understood physiological or biological condition known as shock which is not, as a rule, a marked concomitant of mastoid surgery.

Nor am I by any means convinced that anociassociation as advocated by Crile is theoretically correct or has any practical application as such.

I have only tried this method in five cases, but in all of these the results have been most gratifying. The technique I have employed is as follows:

An hour before the patient goes on the operating table he is given one-sixth of a grain of morphine sulphate and one hundred and fiftieth of a grain of atropine sulphate, hypodermically. After the patient is well under the ether anesthesia, the skin is infiltrated with a solution of which is given by the open drop method, novocain one-half per cent and epinephrin chloride one-fiftieth per cent. It requires but a small quantity to accomplish this. Then a deep injection, sub-periosteal if possible, is given of urea and quinine hydrochloride 1 per cent; after waiting five minutes the operation is proceeded with in the usual manner.

This in no way modifies or effects the healing of the wound. I prefer the blood clot dressing and have found healing equally as prompt and satisfactory as when local anesthesia has not been used.

*Read in Eye, Ear, Nose and Throat Section, Southern Medical Association, Ninth Annual Meeting, Dallas, Texas, Nov. 8-11, 1915.

LATERAL SINUS THROMBOSIS.*

By J. H. Barnes, M.D.
Enid, Okla.

Lateral sinus thrombosis is not so common as we may think when we observe the position of the sinus to the middle ear and the mastoid cells. But when it does occur it is imperative that we be able to make a diagnosis early in the life of our patient.

I have nothing new to offer on the subject, but wish to point out some of the points of diagnosis and to report a case that was diagnosed as lateral sinus thrombosis, also as a severe middle ear infection and mastoiditis which I am sure now was neither, but a brain abscess with local meningitis, though there were no tests made to confirm the diagnosis.

ANATOMY.

The lateral sinus is in the lower posterior region of the skull in a depression from the torcular herophili forward to the jugular foramen. It passes close to the mastoid cells just before it terminates at the jugular foramen as the internal jugular vein.

ANATOMY OF LATERAL SINUS.

Its position to the ear and mastoid cells is so variable that we are at a loss just where the sinus is in the mastoid.

On examining twenty skulls in one series the sinus was not in the same position in any two skulls. It passed in one-eighth inch to external auditory canal to an inch or more behind it. It is sometimes close to the cortex or may be an inch or more from the surface.

The mastoid cells are at times surrounding the sinus. All these conditions make it in the road to danger when the middle

*Read in Eye, Ear, Nose and Throat Section, Southern Medical Association, Ninth Annual Meeting, Dallas, Texas, Nov. 8-11, 1915.

ear is suppurating and does not have free drainage.

The lateral sinus is joined by the superior petrosal above and the inferior petrosal below the mastoid.

The cause of lateral sinus disease comes directly from involvment of the mastoid cells, which is secondary to middle ear suppuration. All severe suppurative middle ear disease involves more or less the mastoid cells.

The sinus is more apt to be diseased from an acute exacerbation of an old mastoid disease. There is a history of chronic discharge from the middle ear,or it may be a frequent recurrence of the suppurative ear. It is very seldom that an acute mastoiditis will attack the sinus.

We find that the diseases of childhood are the forerunners of these ear and mastoid diseases such as measles, scarlet fever, diphtheria and influenza and pneumococcus infections.

Any of these infections are very apt to affect the ears if the child has adenoids.

It has been noted that the ears are seldom affected when the child's throat is healthy or the adenoids have been removed early.

The symptoms of lateral sinus diseases are: Discharging ear of a chronic nature with involvment of mastoid, usually an acute attack of an old affection.

The mastoid is tender on pressure and more or less headache. The symptoms that are diagnostic are a severe chill with high fever, which is 103 or 104 while the chill is still on, and then rises to 105 or 106 in a short time, followed by sweat and a lower temperature, even down to normal. Then in a few hours or a day or two we have recurrence of the chill with the same symptoms. The chills are very irregular as to time, but the character of the chill, fever and sweats are the same in each attack. The patient may feel quite well between the attacks.

If the sinus becomes involved low down next to the jugular foramen, the vein below becomes tender and may appear as a hard cord in the path of the jugular vein just under the anterior border of the sterno-cleido-mastoid muscle.

The pathology begins as a phlebitis. There is a deposit thrown out on the inside of the vessel which becomes larger till soon a clot is formed which fills the sinus and the circulation is cut off. If this clot is infected and the germs are thrown into the circulation we have the symptoms as given above, those of severe septicemia. The clot may be sterile and the phlebitis be so walled off as to protect the circulation. Then we do not have the severe symptoms and the patient may get well without surgical interference.

The complications are brain abscess, meningitis and an extension of the infected thrombosis to the other sinuses. There may be metastatic abscesses and pneumonia.

The treatment is surgical so as to get good drainage. The mastoid cells should be cleaned out thoroughly and the sinus exposed. Before it is opened the jugular should be tied off below so as to protect the general circulation.

Then open the sinus and clean out the clot from above and below until we get free bleeding.

If we do not get free bleeding from below we may be sure the clot extends as far as the inferior petrosal sinus; then we should dissect all the jugular from above our tie-up as far as possible.

After all sources of infection have been removed we pack the wound tightly and bandage. Dress the wound on the third or fifth day, depending on condition of the patient.

If there should be a recurrence of the symptoms then we should open the wound and look for further infection.

If the operation is done early before the system is too much saturated with the infection we may get a hasty recovery.

I will now give you a report of my case that I first diagnosed lateral sinus disease, not from the typical symptoms, but from the sudden rise of temperature. Then, dropping in a few hours to nearly normal.

CASE REPORT.

Boy age 14, father physician, in February, 1915, was taken with what appeared to be acute otitis media. He was sick for a few days before with some disturbance with stomach; he had fever and some aching of limbs as if he had la grippe. He was given a dose of Pluto water and in a few minutes vomited and burst his right ear drum, which was called to the mother's attention by hemorrhage from the external ear.

I was called and cleaned the ear and found the ear drum ruptured. He had had no pain up to this time in the ear. In twenty-four hours pus began to discharge very profusely, which was from the pneumoccoccus.

The fever continued from 102 to 104, which was thought to be partly from his disturbance in the alimentary canal by his attending physician, who was seeing him every day with me.

He had had for the past four years repeated attacks of discharging ear, which lasted from a week to a month. I saw him a month or two before this attack and the ear was dry and the drum membrane healed, so diagnosed this attack as acute suppurative otitis media. The drainage was good in this attack, but after three or four days had severe headache all over the head. There was no tenderness over mastoid cells and no pain in ear.

His fever and pain continued high for a little more than a week, when it began to subside. The discharge became gradually better and in two weeks was apparently well and started back to school. His ear appeared to have quit discharging. Two weeks afterward he came to my office, saying that his ear was closed up. I cleaned out some foul, thick pus and found the ear drum had not closed and directed him to return for further treatment.

Two days after I was called to the house to see him. His ear was discharging very freely a thick yellow pus, which was pneumococcus variety of the streptococcus form. He had high fever and complaining of his stomach as before. The fever continued to rise from 102 to 105 in the typhoid fever curve. The ear discharged freely with no pain for two days, when he began to complain of headache all over the head. The pain got worse and soon he was unable to move his head without severe pain. There was no tenderness over the mastoid or any one point.

About the fifth day the ear ceased to discharge the ear drum bulged. We called a consultation and it was agreed to incise the ear drum. We opened from above and below into a large opening in the ear drum. It was at this time that we agreed that the mastoid should be opened in twelve hours if the ear did not discharge or the pain, which was very severe, did not subside.

The next morning after we had incised the drum we called the second consultation, as all the symptoms were worse and the ear dry. The temperature up to this time had run a typhoid course till it reached 105; then it suddenly dropped to 101 and in a few hours was 105 again.

The second consultant thought we had a case of mastoiditis and suggested the third consultant, who arrived that night just twenty-four hours after we had freely incised the ear drum. The drum was still bulging and the last consulant thought that his high fever, which had gone up and down three times in twenty-four hours, was due to retained secretions in the middle ear, and suggested a mastoid operation if we did not find pus by reopening the drum membrane.

During the day the physician in charge made a diagnosis of lateral sinus thrombosis, though there was never a chill nor the least signs of one. The temperature was that of a phlebitis where the germs were thrown into the blood, septicemia. He did not look septic at any time. His face was a good color and he had no sweats up to this time. It was suggested that his blood should be examined, but this was not done, as we felt sure the opening of the mastoid and lateral sinus would relieve him.

We opened the mastoid immediately after the arrival of the third consultant, as we had everything ready for the operation. After the patient was put to sleep we opened the ear drum; there was no pus, so we opened the mastoid. There was only a thin cortex over what had been mastoid cells. We opened into a large cavity which communicated with the mastoid antrum and found the lateral sinus a reasonable distance behind the ear and exposed on posterior wall of the cavity and pus coming up from the lower posterior part of the cavity from around the lateral sinus. The lower exposed part of the sinus was flat, making a depression down below the cavity filled with pus. The sinus was closed for about one-half an inch above the compressed sinus.

We ligated and cut the jugular below and then opened the compression and took out a hard and comparatively healthy clot. The vein bled freely from above and below, so we packed the wound tightly and bandaged.

This was done just one week from the time I was called to see him.

The symptoms continued as before with pain and high fever; sometimes in the morning it was lower than in the afternoon. Then it would run to 105½ very quickly. He began to have sweats and breathe very rapidly, 40 per minute.

The wound was dressed the third day, looked good; no discharge of pus from the wound or ear.

He still got worse; began to show signs of weakness on the fifth day after the operation and the R. ext. rectus became paralyzed and the pu-

pil did not react to light. This was the only sign of paralysis. He died on the eighth day after the operation.

This was evidently a case of chronic mastoid disease with probably an involvment of the sinus and at this time had found its way into the brain in a region which produced but few symptoms other than the severe pain and high fever which went to 107 just before death.

There was nothing that we did that seemed in the least to help him. The sinus was thoroughly cleaned out and we felt sure that he would improve, and if it had been a mastoiditis or lateral sinus thrombosis he would have shown some signs of improvement. So we make a diagnosis by exclusion.

A spinal puncture should have been made for pus and leucocytes. A post mortem is the only means of a definite diagnosis.

MASTOIDITIS WITH LATERAL SINUS THROMBOSIS AND CEREBELLAR ABSCESS—OPERATION, RECOVERY.*

By John H. Foster, A.M., M.D.
Houston, Texas

The report of a single case before a scientific medical body requires in general an apology or an explanation. The one to which your attention is invited today, however, has some very unusual features, sufficiently so, it seems, to justify recording.

The patient, P. R. H., male, aged 25, came under our observation on March 20, 1914. He gave a history of trouble with the left ear for ten days. The membrana tympani had been incised and he had done fairly well until two days previously, when the pain again became severe and some swelling had developed about the ear. Examination showed that he was suffering from furunculosis of the canal of the ear as a complication of the middle ear infection. He was moved to the hospital, and under gas anesthesia the canal was incised and pus evacuated from two or three places. The middle ear discharge was slight. During the following few days other infected points in the canal developed and were opened; the middle ear discharge ceased, the membrane healed, and at the end of a week he left the hospital apparently well.

On April 2d, five days later, patient appeared at the office complaining of great pain in the left ear again. His temperature was 103° F., and examination revealed the drum red and bulging. It was incised freely and a bloody discharge liberated, and he was sent back to the hospital. His temperature on admission to the hospital was 104° F., and he complained of great pain in the ear. Hot irrigations were ordered with cold sponges to reduce the temperature. Within twelve hours his temperature dropped to 101° F. and he was more comfortable, though never absolutely free from pain, which seemed to him to be deep within the ear itself.

At noon of the fifth, after slight chilly sensation, his temperature rose to 104.2° F. Blood count was made on the fourth day, showing 12,000 whites, 80% polys. On the sixth day patient first complained of pain outside the ear and localized it in the left frontal region, describing it as a severe, boring pain. There was no mastoid tenderness nor sagging of the postero-superior canal wall. On the afternoon of this day a distinct chill was recorded with a rise of temperature to 104.2° F. again. Examination of the discharge from the ear showed the presence of numerous Klebs-Loeffler bacilli. Blood count showed 18,000 whites, 76% polys. X-ray plates showed cloudiness of all the mastoid cells. Ten thousand units of diphtheria antitoxine were administered and patient's mother in Georgia notified of his condition, and of the probable necessity of operation.

The next day he seemed much better. His temperature rose no higher than 101.3° F. and he was decidedly more comfortable. The following morning, however, the temperature rose to 103° F. and it was deemed best to go into the mastoid despite the lack of tenderness. Accordingly, on April 8th, the mastoid operation was performed. All of the cells were found involved, filled with pus and granulation tissue. The wall of the lateral sinus was exposed and found somewhat discolored but not obstructed, and was not incised, but the bone was removed over it for a distance of two inches, including the knee, so that it could be easily opened later if necessary, and the wound was then dressed.

The patient was much depressed when he left the table and had a hard chill in a short time. He rallied, however, and was more comfortable soon.

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*Read in Eye, Ear, Nose and Throat Section, Southern Medical Association, Ninth Annual Meeting, Dallas, Texas, Nov. 8-11, 1915.

During the succeeding five days he got along very satisfactorily. The temperature dropped to nearly normal, there were no more chills or sudden exacerbations of temperature, and we thought he was on the road to recovery. The wound was foul and the infection of the soft parts seemed sufficient to keep the temperature slightly elevated.

On the thirteenth he had a hard chill, temperature rose to 104° F., followed by profuse sweating. A blood count showed 18,000 whites and 90% polys. The patient was anesthetized again and the lateral sinus investigated. The wall at the knee was found almost necrotic and contained a small peripheral thrombus. There was free bleeding from both ends. Plugs were inserted above and below and the intervening diseased wall removed with scissors. Patient had one fairly good day and again the temperature jumped up to 104° F., and on the sixteenth day a chill was noted. On dressing the wound several sloughs were removed from the scalp wound, these coming out like the "core" of a furuncle.

On the eighteenth the plugs were removed from the sinus wound and the ends found nicely sealed and clean. On the inner wall of the sigmoid sinus, however, a necrotic area was noted which, on removal, opened an abscess extending into the cerebellum for nearly an inch. Some necrotic brain tissue came away. A drain was put in and this was changed daily.

For three days following this patient ran an absolutely normal temperature and felt comfortable. On the twenty-second he had a hard chill and his temperature rose to 104° F. Another infected area in the soft parts was evacuated and he had two more good days. This was succeeded by a stormy period with chills. The wound above was looking well, so it was decided to resect the jugular vein.

At the operation the jugular was found with difficulty, being collapsed below the level of the thyroid vein, and consisting of a mere fibrous string. When the thyroid and common trunk of the facial and lingual veins were tied and cut, the vein was dissected out and found necrotic above, pulling out with slight force. Drainage was put in above and below.

For three days again the temperature was practically normal, and then chills and rises of temperature were again noted. Pus was found oozing from the posterior part of the wound, which had previously been clean, and the sinus was carefully opened and found to contain pus for a distance of more than an inch back. Rubber drainage was put in and staphylo-strepto vaccine given for the succeeding week, these being the only organisms now found in the discharge.

The patient's condition was pitiable. He was emaciated and weak and, to add to his troubles, both ankles had burns from hot water bottles. However, he began to improve and his progress toward recovery was uninterrupted except for a chill and rise of temperature on May 10th, for which no cause could be found. The next day his temperature went to normal and remained there. He left the hospital on June 3, 1914, after a stay of two months, and was soon entirely well.

The object that prompts this report is not to record the recovery of so desperate a case, but to bring out some interesting and unusual features presented by this case.

1. The occurrence of this trouble a few days after apparent healing of a middle and external ear infection.

2. The presence of Klebs-Loeffler bacilli in the ear discharge. These disappeared after the administration of the antitoxine and were never found afterwards in the discharge. There was never anything about the appearance of the wound suggestive of a diphtheritic infection. The disappearance may have been only a coincidence.

3. The complete absence of mastoid pain or tenderness and the reference of the pain to the corresponding frontal region, while the X-ray plates showed definite involvment of the mastoid cells. I have recently seen another case presenting this peculiarity, and in both the operative findings verified exactly the X-ray indications.

4. The late extension both downward and backward of the infection of the lateral sinus, when at the time the sinus was opened there was only a small parietal clot, and the wall was removed well beyond any apparent disease.

5. The finding of the abscess of the cerebellum in removing the necrotic inner wall of the sinus.

6. The occurrence of circumscribed sloughs in the soft tissues of the wound which were accompanied by rigors and rises of temperature from time to time.

7. The absence of metastatic foci of infection.

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DISCUSSIONS

Papers of Drs. Moore, Barnes and Foster.

Dr. W. D. Jones, Dallas, Texas.—I am very much interested in the case reported by Dr. Foster, and shall confine my discussion to his case. It is not unusual for a lateral sinus thrombosis case to be up walking around during the interim between rigors and exacerbations of temperature, but it is quite unusual to have a case presenting so many interesting features as the one Dr. Foster has reported. With the symptoms outlined in this case, it would have been impossible to have made a diagnosis of cerebellar abscess. The only point that one could take issue with Dr. Foster on in his course of treatment is whether he should not have ligated the internal jugular vein at the time he opened the lateral sinus and found a thrombus. Personally, I would have ligated the internal jugular at this time.

Dr. Homes DuPuy, New Orleans, La.—Both papers offer food for thought. With reference to the diagnosis of acute mastoiditis a larger experience has brought me in contact with a group of cases in which the pain on pressure was notably absent. I had to seek for danger signals in other directions. I have seen posterior-superior sagging of the meatus without the slightest pain on pressure over the mastoid. The eburnated type of mastoid is apt to negative the objective pressure symptom. I am not prepared to say just how much help we can expect from the X-ray, but I can say that in obscure cases, with no sagging of the meatus, and no pain on pressure, the X-ray has helped materially in suggesting trouble in the mastoid, and thus decided the question of operation.

In reference to sigmoid sinus thrombosis the temperature chart as shown by the doctor is, in the presence of or in the wake of a mastoiditis, so typical of thrombosis that there should be no hesitancy in our surgical attack. But it is the typical cases, when the temperature wave fails to run the up and down movements, and when the initial chill is absent—it is then that we need light from other reliable sources. The blood picture as expressed in a bacteremia seems to offer diagnostic help. It is worthy of more extended application in order to test its real value.

Dr. J. W. Jervey, Greenville, S. C.—I would like to say a few words, first in regard to Dr. Moore's paper, which I think is of extreme practical importance. Not in the nature of a criticism, but in the nature of a warning. While it is desirable to accomplish the things which he is endeavoring to accomplish, we must remember the dangers of the use of epinephrin in the early stages of anesthesia. It is true, he stated he used it after the patient was well anesthetized, but if the method is adopted in the face of the known danger, and the use of epinephrin in the early stage of anesthesia is practiced, there are certainly going to be a number of fatalities. Several have already been reported, and it is well that we should bear them in mind. After the anesthesia is fully complete there appears to be no danger in the use of this extract.

In regard to sinus thrombosis, while Dr. Barnes has taken the position that the condition is probably very unusual, or at least it is not a common one, yet it is nevertheless true that a great many of these cases are overlooked by our general practitioners and never come to us at all. A large number of these cases, comparatively speaking, I mean, are undoubtedly diagnosed by the general practitioner as malaria or typhoid fever, and they go to a high mortality with these diagnoses. I feel that while that part of the paper needs but little discussion among ourselves, still it is a point which urges us to appear as often as we can in our State Associations, in our County Associations, and bring out these points before the general practitioner, so that fewer of these cases will be overlooked in the future. The disease is such that if the cases can be recognized early the mortality is extremely small. I mean to say that in the early stage a thrombosis is never an infected condition; a thrombus starts in the sinus wall and is made up of an agglomeration of inflammatory exudates, but it does not become infected until there has been an ingression of infection from the outside. That infection can almost invariably be removed if the mastoid operation has been successful; if the mastoid case has been diagnosed and the operation properly performed, the removal of the infected material having followed, the bony sinus and channel of necrotic tissue and infection in the mastoid process being thoroughly removed from the sinus area, the result will be a cure; or, if this important move is overlooked, is passed up, the mortality from these cases will be anywhere from 50% to 90%, according to the amount and virulence of this infective invasion which has occurred.

I think that Dr. Barnes' case is an admirable illustration of this point. He had an old chronic case and a history of repeated previous series of discharges from the ear. He had then an acute mastoiditis, with pain. As I understood it (I may be mistaken; I don't hear very well, and I may not have gotten it exactly right), but, as I understood it, he also had a variable, a typical temperature. Given a case of that sort, an old case where we know he had the infection of an acute mastoiditis associated with pain, and that train of symptoms, that history, ought to spell operation; and had it been done at the time, had the mastoid cells been cleaned out, and had the sinus been cleaned out down to the bare wall of the sinus itself, it is at least possible that instead of reporting a fatality he might have reported a recovery.

Dr. Arthur Irving Weil, New Orleans, La.—All of these papers have been interesting, and as we have but a few minutes for discussion, we have to take the most salient points. The paper of Dr. Moore is suggestive. We all realize that our patients after mastoid operation suffer considerable discomfort, and if his suggestion is followed by relieving that trouble, I think it is something well worthy of practice by the profession at large. I have never tried it, but I mean to give it a trial at my first opportunity. The objection made to that method by Dr. Jervey to me has little weight. I want to say that I have used adrenalin solutions on various patients on whom we have operated, under general anesthetic, and I have used it at will, at any time. I know that there is a bugaboo that adrenalin administered in the early stages of general anesthetic carried

with it a considerable element of danger, but I must say in my own experience I have used it frequently in general anesthesia, and I have never noticed the slightest inconvenience.

With regard to the symptoms of sinus thrombosis and mastoid in general, of course, as has been said by the readers, and also in the discussions, especially by Dr. Dupuy, the pain on pressure, although a very reliable symptom when present, is of no value in excluding the diagnosis when it is absent, and I have frequently, in my own experience, seen patients without pain on pressure who have a well developed mastoid. Now, there are certain things that help us in diagnosis, one of which is the X-ray, and I think we will all be agreed that the X-ray is an invaluable aid in the diagnosis of mastoditis, but I think that even the X-ray is given possibly a little too much weight in the diagnosis of mastoiditis. I had a case within the last two months in which the X-ray was used. This was the case of a young woman who gave all the evidences of a latent mastoiditis, the pain on pressure over the mastoid, and a localized pain and dizziness through the head on that side, and in addition to that the history, a few weeks or a few months before, of a rather obscure, but nevertheless definite ear infection; in fact, all the things that make us think of a latent mastoiditis. Now, the X-ray confirmed our diagnosis perfectly, showing a complete obliteration of the mastoid cells on that side, the other mastoid normal.

Now, at the time of operation it was found that there was a complete sclerosis of the mastoid on that side. The other side was probably normal as shown by the X-ray. This is an assumption only, as naturally the other side was not opened. It is doubtful to me whether the existing sclerosis of the diseased side could have been caused by a chronic mastoid infection of only a very few weeks or months' duration, as to my mind a sclerosis of this character must be the result of at least several months or years' chronic infection. The mastoid, at the time of operation, except for sclerosis, seemed perfectly healthy, and there was no pus to be seen. This case was undoubtedly one in which there was a congenital sclerosis of the mastoid, which naturally, in the X-ray, gave the appearance of suppurative obliteration. This is a rare condition, but shows at least one instance in which the X-ray findings are unreliable. I might add, however, that the operation completely relieved the symptoms.

Now, just one word in regard to bacteremia. That is another thing which is a valuable aid to us when it is present, but in the first place it is well known that the blood must be taken at a certain definite time. It has been brought out by investigations of numerous observers that bacteremia is to be determined in the blood, if the blood is taken at a time when the chill takes place, or within a very short time afterwards while the temperature is high, but if the blood is not taken at that time the test for bacteremia is of no use. If bacteremia is present and we discover it by our investigation, it is a great aid to us in making the diagnosis correctly, but, on the other hand, I know it is possible, and I have had some cases in which the bacteremia was absent even though the blood was taken at the proper time, in which the operation was done, in spite of the absence of bacteremia, where we found the sinus thrombosis, so I think we should not rely entirely too much on bacteremia in its absence, although its presence, of course, is an absolute indication for verifying our inferences.

Dr. Leake, of ————————: I just want to make one point in reference to the remarks of Dr. Jervey referring to the fatality in the cases which he speaks of. I would like to report one case of fatality that I have seen in my service. This is of a young girl about fifteen years old, who was to be operated on for sub-mucous septum under local anesthesia. The linten was applied at the beginning of the operation. She became frightened and unruly, and for some reason or other we insisted on getting through with the operation. We took her upstairs to the general operating room and administered the anesthetic, and she died very promptly from what apparently was the association of the general anesthetic with adrenalin. There was nothing else so far as I could see to account for the death. Her heart seemed to be in good condition before the operation was started; her urine was examined; her general physical condition was apparently perfect. She might have lived to be eighty years old but for the septum that she had, and I could only account for this death because of the association of the general anesthetic with the adrenalin. I believe it is dangerous.

Dr. H. T. Aynesworth, Waco, Texas.—In the discussions today the contention of Oppenheim that a bacteremia in mastoid disease means sinus thrombosis has been quoted. As we know, this is by no means unanimously accepted. Of course, when we have a lateral sinus thrombosis or thrombosis of any of the sinuses there will be a bacteremia unless the thrombosis is non-infected and has not broken down. On the other hand, we may have a bacteremia and no sinus thrombosis. Of this we feel very sure. One of my first cases of this character was an acute mastoid which, after the operation, developed a bacteremia with high fever for two or three days. The condition soon passed off, however, and I feel very sure there was no sinus involvment.

Another point has been emphasized in the discussions, namely, the neglected cases of sinus thrombosis. Unfortunately I have had experience with a few of this kind. One in particular I may cite. The patient, male, aged 19, was brought to me with the following history: For several years had been a sufferer from O. M. P. C., with now and then exacerbations. For the past eleven days he had suffered from, on the average, two chills a day, followed by high fever and profuse sweats. His physician mistook the condition for one of malaria and filled him full of quinine. When brought to me the condition of the patient was so bad that I could not overcome the septic state, although I drained his sinus, opened a brain abscess and stopped his chills.

Dr. W. T. Patton, New Orleans, La.—In the local operation spoken of by the doctor, I am very much interested. I have been trying to do some operating on the mastoid with local anesthesia. The first case was very anxious that I do it under local anesthesia. She claimed that

she cared not what I did so long as I did not give her a general anesthetic, so I promised her that I would do the best I could. I gave her 1/150 scopolamin and 1/8 morphine one-half hour before the operation. I put her on the table and gave her another injection of 1/150 scopolamin and 1/8 morphine, then used ½ of 1% novocain, injecting the solution in line of proposed incision over mastoid; also injected the posterior wall of the external auditory canal, then cutting through the skin down to the periosteum, I injected the periosteum with the novocain. The only thing that I was worried about was getting through the cortex; fortunately the mastoid cortex was very thin. I only had to make about two licks with the chisel and I entered my mastoid cells. I do practically all my mastoid work with the Rongeur forceps and curette, using the chisel first, and after going through the cortex I scrape with the curette and then bite off with the Rongeur. I succeeded nicely and got through with the case. The girl went to the room feeling pretty good and said she had not had much pain and slept for three hours. I was much elated over it and I went right ahead to hunt for another case.

The next was a man. I did my best, but I only made primary incision. He raised so much Cain that I was unable to proceed and had to give him a general anesthetic and then finished the operation. I did not intend to take on so much on that. I am particularly interested in the brain case just cited. I want to cite one case to illustrate how hard it is to diagnose a sinus thromboris or cerebral abscess from the Charity Hospital, Ear and Throat Service, and the case came into the surgical service from the country with a history something like this: Two days before admittance he had been chasing his pigs or cows or something and had a sudden pain in the mastoid region. That night he had a twitching in his left foot, the hand, then the side of the face. The next morning he was paralyzed on the entire left side and was sent to the city and admitted to the surgical service. The surgeon called me in to see him. There was a slight bulging of the right tympanic membrane and a sagging of the posterior-superior wall of the external auditory canal and a slight tenderness over the right mastoid, but nothing to really diagnose mastoiditis upon. The man was slightly comatose, with the eyes turned out, the pupil dilated on one side, he had pulse of 60, with temperature of 101. Made diagnosis of probable brain abscess. There was no history of trouble before. I got that absolutely; he had had no ear trouble before this condition. I called in a neurologist and he agreed with me it was a brain abscess and advised operation. I had a blood count made, which was 35,000 leukocytes. There was a count of ninety lymphocytes. In other words, a high leukocyte and lymphocyte count, which is a bad sign; the Wassermann was negative on two occasions. After studying it a little more—the man was getting worse—I decided to open up the mastoid, and I found a few drops of pus in the antrum of the mastoid and the rest of the mastoid very slightly involved. The dura or sinus was not exposed and I was absolutely at a loss to account for his symptoms. I trephined the temporal region and found no pus; I punctured the dura and explored the brain in three directions with a small cataract knife and found nothing. I sent the man to the ward to die; the next day he was feeling better, asking for something to eat. A week later the same condition came on again, getting steadily worse, and, as he was dying, I decided to operate again. I opened up the wound again and explored the brain six more times with a slender cataract knife and found nothing. The man left the table in good condition and continued to improve, and today he is practically well with a slight cerebral hernia. I never found any pus, but ten days after the operation a slight amount of pus began to exude, and the only way I can account for that pus is that it sought the point of least resistance and worked its own way out. I am going to report the case later on.

Dr. Sidney Israel, Houston, Texas.—The point mentioned by one of the essayists pertaining to the diagnostic use of the X-ray when dealing with affections of the sinuses is of interest in that while much valuable data can sometimes be obtained, one important factor must be observed, and that is that skiagraphy in this locality has certain positive limitations. To determine by means of the X-ray photograph alone that a sinus does or does not contain pus, resolves itself occasionally to rare or expert differentiation, and the experts are unfortunately in the minority. The most serious question to be interpreted is the determination between pus in a given sinus from merely a change in the mucous membrane lining of the sinus with no pus present, both of which conditions show differences in density when compared with a skiagraph of an unaffected sinus.

The pathologic change in the mucous membrane lining the sinus and the developmental anomalies, including congenital absence of one or both sinuses, are the important factors to be kept in mind when the Roentgen ray has been summoned as an aid to correct diagnosis.

Dr. J. H. Barnes, Enid, Okla.—I have just a little to say. The paper which I presented, that of a case of sinus thrombosis, was very interesting to me from the fact of it being a doctor's boy and the doctor being a special friend of mine. The boy was one of my playmates in a way and it was a very interesting case, and I want to report this case for this fact, that so often diagnosis is not made early enough in which to make our operation in time to save our patient's life. However, this operation was done one week after the first symptoms came on. One point in the diagnosis was that the boy had gone through a previous attack a month before this, with exactly the same symptoms. He got well apparently and went back to school, then having the second attack, which we diagnosed as bacteremia from the symptoms as discussed here this morning, which misled us in the treatment of this special case and misled every consultant—and we had some good consultants, including Dr. Taber, of this city, who was one of them and was present and operated on the case at the time of the operation. He said to me—he asked me what I thought was the trouble with the boy, and I said: "He evidently has a lateral sinus thrombosis—that is, he has the evidence of bacteremia, and the sudden rise of the temperature, etc., certainly shows

that." He asked me how many cases I had seen. "Well," I said, "I have not seen more than three cases, but this is the fourth that I have seen of lateral sinus thrombosis." This was then before the operation and he seemed to agree with me. That made me feel considerably better, because I was concerned in the welfare of the boy, and when we operated, as explained in the paper, with no apparent trouble outside of our cavity, I felt much better and thought the boy would get better, but the symptoms continued as before the removal of that clot, and in one week after the operation, two weeks from the time the boy was taken to me, the boy was dead. There was no symptom of abscess outside of his pain and the high fever. His breathing and pulse showed that he had meningitis. I wish to thank you for the privilege of presenting this case, and thank you very much for the attention.

Dr. John H. Foster, Houston, Texas.—I want to thank the members for their attention. There are just one or two points that I want to take up for the moment.

First, the question was raised in regard to, in sinus thrombosis cases, of making routine practice of primary ligature of the vein. That, of course, opens up a question and a very wide field for controversy. Personally, I have never been able to make up my mind to make a routine practice of ligating the jugular vein before opening the sinus in all cases. I do not think that where a small area of the sinus is apparently involved, where one can get at what appears to be all of the diseased wall, where one can get a free return flow in both directions, that it is necessary to ligate the jugular at the time. I know that in some cases, as in this one, it is necessary to go back and resect the jugular later, but in many cases it is not so.

In regard to the use of the X-ray, I consider that wherever possible we ought to X-ray every case of suspected mastoid trouble. The X-ray findings require much more, of course, than the taking of a picture. It requires an expert to interpret that plate, but I think it is worth a very great deal to us in the intepretation of our symptoms, and while it is to be accepted, as some of our confreres have stated, in very much the same sense in which we accept the clinical microscopical findings, still it has been of greatest benefit especially in cases such as this one, and in the other case to which I alluded, where the pain is absolutely absent from the mastoid region, being referred to another part of the head. In both of these cases the X-ray showed exactly the extent of the involvment and also showed the beginning of the breaking down of this bony septa between the mastoid cells.

I thank you very much.

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EDITORIAL DEPARTMENT

FRAUDULENT MAGAZINE SOLICITORS

A band of criminals have been fleecing the public, and particularly the doctors, in several Southern cities and states during the past two months. They usually go in pairs, very plausible young men or boys, who claim to be students working their way through college. They make the plea that the magazine agencies will give them a scholarship in some college—usually located in the state in which they are working—if they secure enough subscriptions. They claim to represent all magazines and medical publications and in order to get the scholarship propose to sell subscriptions to any magazine or journal for less than the regular subscription price. They will also collect subscriptions when due. In Birmingham they collected money from several physicians for a number of different publications, including the Southern Medical Journal. They have also collected dues for the Southern Medical Association. We learned of their activities too late to catch them, though the police and detective departments of Birmingham made every effort to locate them. They were next heard from in Bessemer and Talladega, working under different names and proposing to represent different agencies, but in each place they collected money for the Southern Medical Journal. They have also collected money for subscriptions to the Journal of the American Medical Association, Surgery, Gynecology and Obstetrics, and other well known journals. Such criminals who prey upon the generosity of men should be in prison and it should be easy for some physician to be Sherlock Holmes enough to detain them in their office until the police could investigate their record. If any physician should suspect solicitors for the Southern Medical Journal, or other medical journals, of being the parties described we would appreciate it if he will telegraph the Southern Medical Journal, at our expense, and we will wire the police department the desired information. It would be well for it to be announced at the meetings of medical societies that these fraudulent solicitors may work any city at any time so that physicians may be on the lookout for them. The Southern Medical Journal has only two solicitors in the field at this time, one of them being the highly respected Assistant Secretary of the Association, Miss Della J. Purifoy, and the other Miss Onvie Moore, and also a few representatives of well known medical book publishing companies. The methods of this band of criminals are particularly reprehensible because there are many worthy young men and young women, who are earning money to pay their way through college by securing subscriptions to magazines.

CONGRESS AND MEDICAL PREPAREDNESS.

The physicians in the South have been much concerned recently regarding the question of medical preparedness in the United States army. They have not forgotten that the dreadful mistakes in sanitation during the Spanish-American war were due to the fact that there were not enough medical officers in the United States army to properly look after the volunteer troops in various concentration camps, particularly those near Jacksonville, Miami, and at Chicamaugua. They realize that this lack of medical preparedness cost the lives of thousands of the flower of our country's manhood and gave the South a reputation for unhealthfulness which was undeserved. Consequently, when it was understood that legislation would be enacted providing for an increase in the United States army, the physicians of the South were interested in seeing to it that an adequate medical department of the United States army should be provided. At the November meeting of the Southern Medical Association resolutions were adopted urging Congress to provide for an increase of from five medical officers per thousand of enlisted men, the present ratio, to seven per thousand, the number advised by Surgeon General Gorgas. Following this a number of city, county and state societies adopted similar resolutions which were sent to the Congressmen and Senators from the sixteen Southern states.

After some deliberation the Congressional Committee on Military Affairs reported a bill for an army of 126,559 as the minimum enlisted strength, but provided for only 695 medical officers. Be it said to their credit, however, when the physicians from various states informed their Congressmen and Senators of the dreadful consequences in sickness and deaths that would surely follow in the proposed concentration camps if Congress failed to provide an adequate medical department of the regular army, the committee finally reported favorably upon all the recommendations made by Surgeon General Gorgas. It is presumed that the Senate will concur in the House bill. If so, the United States army will have the proper protection from infectious and contagious diseases both in war and in times of peace.

Thus is recorded another victory for organized medicine. Surgeon General Gorgas and other officers in the medical corps of the United States army, even though they saw that a dreadful mistake was about to be made by Congress, could not by law make any effort to influence legislation; but various medical associations, by resolutions and by personal letters from their members, appealed to the Congressmen and Senators representing their states, pointing out to them the duty of Congress to protect the American citizens who might enlist in the United States army, and the mistake was corrected by the Congressional committee.

The response to the editorial on "Medical Preparedness" in the March number of THE SOUTHERN MEDICAL JOURNAL caused the Congressmen and Senators from the sixteen Southern states to be bombarded with letters and telegrams from their constituents in the medical profession urging them to adopt the suggestions of Surgeon General Gorgas. This hearty response to our appeal indicates that the members of the Southern Medical Association were pleased to do their part in enlightening Congress regarding the constructive legislation needed for an adequate medical corps of the United States army.

THE ADVANTAGES OF MEDICAL ASSOCIATIONS.

In an elegant, inspiring address delivered at the meeting of the Tri-State Medical Society of Virginia and the Carolinas, on "The Advantages of Medical Associations," Dr. Edward C. Register, of Charlotte, N. C., its President, used the phrase "intellectual confluence" to describe the quickening of medical thought resulting from the articles and discussions heard in medical associations, whatever their size or affiliations. The address is a polished literary gem, worthy of study and preservation, and the subject is one that should secure the thoughtful consideration of every one who essays to practice medicine or surgery. For unless one is to secure an advantage of some kind by doing so, what is the use of going to the trouble and expense of traveling from home, enduring hotel life, risking the loss of patronage by absence, and making an utter break in the routine of one's existence? Yet the fact that medical societies are steadily growing in numbers and attendance proves that those who affect them and continue their interest from year to year, leading their friends to do the same, must find some kind of profit in them or they would not exhibit such constancy. From the nature of the case that profit must consist either in social pleasure or increased reputation, resulting in extended patronage or in added professional knowledge that gives greater professional ability, or a chance to discuss with a sympathetic audience features in practice that seem new to them, with their successes or failures, or simply the thrill of personal companionship with one's peers. One or the other of these features must be the chief inducement. The truth is that whether consciously or unconsciously the visiting physicians feel that several or all of these items combine to render almost irresistible the desire to participate in every session of their favorite association. No matter how eminent they may be, they return to their homes enriched with new friendships, new ideas, loftier ambitions and a sense of increased power and ability to meet and successfully cope with whatever emergencies may confront them. From every part of the country and from all sorts and conditions of medical men there has been a "confluence" of ideas and experiences that could have been accomplished in no other way. True the medical journals publish the articles and discussions, but reading them bears the same relation to those discussions as vitalized by personal presence as a well written letter from one friend to another does to the same matter communicated by word of mouth. This mingling and discussion of theories and experiences fresh from the sources of inspiration is the present glory of our profession and the guaranty of its continued advance along the paths of positive knowledge to the ultimate goal of the eradication of the preventable diseases.

THE APRIL AND MAY MEETINGS OF STATE MEDICAL ASSOCIATIONS.

The advantages of attending the meetings of state medical associations do not need to be discussed. Aside from its being to his personal interest, the physician should consider it a duty to meet and mingle with his fellow practitioners in his state once a year. April and May seem to be the best months for holding the state meetings and a number of Southern States will hold their sessions during these months. The wise and progressive physician will make every effort to attend his state meeting. All of the state associations have interesting and instructive programs as well as most attractive social features for their 1916 meetings.

The following is a list of the dates with

the places of meeting of state medical associations that hold their sessions in April and May:

Tennessee—Knoxville, April 3-4-5-6.
Pres., E. C. Ellett, Memphis; Secy., Olin West, Nashville.

Alabama—Mobile, April 18-19-20-21.
Pres., J. N. Baker, Montgomery; Secy., H. G. Perry, Montgomery.

Georgia—Columbus, April 19-20-21.
Pres., W. S. Goldsmith, Atlanta; Secy., W. C. Lyle, Augusta.

Louisiana—New Orleans, April 18-19-20.
Pres., J. C. Willis, Shreveport; Secy. L. R. DeBuys, New Orleans.

North Carolina—Durham, April 18-19-20.
Pres. M. H. Fletcher, Asheville; Secy., B. K. Hays, Oxford.

South Carolina—Charleston, April 18-19-20.
Pres., G. A. Neuffer, Abbeville; Secy., E. A. Hines, Seneca.

Maryland—Baltimore, April 25-26-27.
Pres., J. W. Williams, Baltimore; Secy., J. I. France, Baltimore.

Arkansas—Texarkana, May 2-3-4.
Pres., J. C. Wallis, Arkadelphia; Secy., C. P. Meriwether, Little Rock.

Florida—Arcadia, May 10-11-12.
Pres., R. H. McGinnis, Jacksonville; Secy. G. E. Henson, Jacksonville.

Mississippi—Greenville, May 9-10-11.
Pres., I. W. Cooper, Newton; Secy., E. F. Howard, Vicksburg.

Missouri—St. Joseph, May 8-9-10.
Pres. C. R. Woodson, St. Joseph; Secy. E. J. Goodwin, St. Louis.

Oklahoma—Oklahoma City, May 9-10-11.
Pres., J. H. White, Muskogee; Secy. C. A. Thompson, Muskogee.

Texas—Galveston, May 9-10-11.
Pres., G. H. Moody, San Antonio; Secy., Holman Taylor, Ft. Worth.

West Virginia—Wheeling, May 16-17-18.
Pres., A. P. Butt, Davis; Secy., J. H. Anderson, Marytown.

INTENSIVE COMMUNITY HEALTH WORK.

In the symposium on Public Health and Sanitation at the ninth annual meeting of the Southern Medical Association, at Dallas, some very important papers were presented for consideration. Though they appeared in full in the March number of THE JOURNAL, yet the subject is so germain to the general trend of public interest that some editorial comments upon them would seem not to be out of place. The article on "Intensive Community Health Work," read by Dr. John A. Ferrell, Assistant Director General of the International Health Commission, New York City, was a forcible presentation of the subject, and no subject could be more important. The science of the preservation of human health aims not only at our immediate well being, but also at the welfare of generations unborn, and may ultimately decide the fate of the nation.

Lacking health a nation lacks stamina, and history shows that such peoples fall a ready prey to a hardier race. Thus Egypt, exsanguinated by the malarial parasite, promptly succumbed to the attacks of the mountaineers of Greece. When, with their triumphs, the soldiers of Alexander carried home in their veins the aestivo-autumnal parasites, they inoculated their race with the seeds of future destruction. When the Romans in their turn conquered Greece, they carried home with them not only Grecian learning, but also the malarial fevers that finally drove them from their proud city to a new home on the Bosphorus.

The only thing that saved the peoples from utter degeneration during the last few centuries was the discovery of cinchona. The general lack of cleanliness among the common people of the races mentioned, and their ignorance of hygienic laws had made them an easy prey to every infection or epidemic, so that even before the introduction of malaria their death rate was enormous. Modern sanitation proposes to change for the better even present conditions, though, as it is, they are far superior to those of former generations. Step by step an organi-

zation has grown up until now, counting from the United States Public Health Service downward it permeates the civil government of almost every state, county and municipality in the country, all working harmoniously together to protect the health of the people. It is easy to see that such an organization, properly handled, is capable of achieving an immense amount of good. In his article Dr. Ferrell describes the work done by certain state boards of health in their successful efforts to eradicate hookworm in their territory. He shows that by concentrating their efforts upon a series of communities they accomplished their object. Three communities, perhaps of different sizes, constituted a series, and ninety days were allotted to each series wherein the county health officer, a field director from the state board, and three assistants conduct the work in the three communities simultaneously. Then another series is treated, and so on throughout the infected territory. Meanwhile the local county health officers have qualified themselves to carry on the work, always receiving aid and counsel from the state board when it is asked for.

In another article Dr. J. Howell Way, President of the North Carolina State Board of Health, presented a similar though modified plan with many excellent features. Its foundation was the employment of an all-time health officer in each county and the county is the unit upon which the efforts of the health organization is concentrated. In some parts of his state the plan is already in successful operation.

The counties contribute a certain sum of money and the State Board supplies the remainder as well as furnishing the necessary amount of expert assistance. The result is that every all-time county health officer is in a position to conduct the sanitary affairs of his county without outside assistance, but that office, paying a good salary for a good man, is indispensable.

Dr. R. N. Whitfield, Assistant Director of Public Health and Sanitation in Mississippi, wrote on "Sanitating a Rural Home," and gave a plan for supplying such a home with all the modern facilities for comfort and sanitation, entirely independent of municipal or other public water plants, and the cost is within reach of the most moderate means.

THE ALABAMA ALL-TIME COUNTY HEALTH OFFICER.

The all-time county health officer movement, now becoming so generally popular, is, so far as the public welfare is concerned, one of the most important advances of recent date. It is valuable not only because it tends to protect the citizens from illness, but because it also will be one of the most potent agencies for increasing the wealth and population of the states. States are built up more by immigration than by childbirth. The newcomer brings energy, enterprise and money. He opens new farms, rears new factories, establishes new banks. But he does not come to states with records of unhealthfulness. He will not subject his family to danger from malaria or typhoid. Hence the work of the all-time county health officer is efficient as an immigration inducement. The fact that such an officer is employed will sometimes be the deciding point when two attractive regions are in competition.

The laws of Alabama provide for the appointment and maintenance of two classes of county health officers, one designated as "a county health officer who devotes only a part of his time to the duties of his office," the other as "a county health officer who shall devote all of his time to the duties of his office." It is of the latter class that this article speaks.

There is only one authority in the state of Alabama that can legally designate a health officer. That authority is the county board of health, otherwise known as the County Medical Society.

When the board of county commissioners or the county board of revenue decides to employ an all-time health officer it notifies the president of the county board of health to call a meeting of his board, at which the present incumbent is removed from his position of county health officer, and a county health officer who shall devote his entire time to the duties of his office is elected. The retiring health officer is eligible for election.

The law specifically prescribes the duties of the all-time county health officer. Briefly, they are as follows: He is to devote his entire time to the duties of the office and under no circumstances engage in private practice. He must have an office in the court house if one is available; must visit repeatedly, if possible, all cases of contagious or infectious diseases that occur in the county and prescribe and enforce measures to prevent their spread; must make special efforts to locate cases of tuberculosis or pellagra, particularly incipient cases, and urge curative and preventive measures. At least once a year he must inspect the schools and their sanitary arrangements, correcting the latter where defective; must examine the pupils for defects of sight or hearing and for disorders or diseases that may interfere with their progress and report such to the parents. He must teach proprietors of slaughter houses, dairies, grocery houses, hotels, lunch stands, and the people at large, the importance of protecting food from dust and insects, especially from flies; must teach the people by lectures and newspaper articles the causes and the modes of prevention of diseases, especially referring to flies, mosquitoes, rats, fleas, ticks and other vermin; and must show the people how to make their homes sanitary. All public buildings and all enterprises employing many persons are under his official supervision.

The foregoing comprises in condensed form a list of the duties of the all-time county health officer in Alabama, and if he be an active, energetic man he can perform them satisfactorily, but he will find occupation for every moment of his time. The work demands an initiative that needs no precedents, an enthusiasm that delights in overcoming difficulties, a tact that draws instead of drives, and a courage that can ignore, and if necessary defy, political influence when it interferes with the welfare of his county.

If in any county whose authorities decide to employ an all-time health officer there should happen to be no physician competent and willing to do the work for the salary they propose, there is no reason why a doctor from some other county or state should not be employed. The movement should have its incipiency in the society. It should send its president and board of censors to confer with the county commissioners, and lay before them the reasons for such action, and endeavor to induce them to provide a salary that will be adequate as an inducement to and a support for a well-prepared sanitarian. Every county medical society in Alabama that has not yet so acted will serve its county and the state truly and well by making the effort without delay.

Two years ago by united effort, the physicians of Walker County succeeded in convincing their county commissioner of the need for appropriating three thousand dollars a year to secure the services of an all-time health officer. Be it said to their credit, the members of the Walker County Medical Society had the wisdom and the courage to eschew politics and to elect a

physician who had never lived in the county, but one who had been trained in sanitary work. The results accomplished by Dr. Grote in the past two years are remarkable and, if human lives and health have a money value, he has saved Walker County many times the amount of his salary and has placed it among the foremost counties in the United States in the uplift of its citizens. In this number of the Journal, page 320, is given a summary of the work by this all-time county health officer for the past two years. We commend its careful study to all physicians who desire the conservation of the health and lives of their fellow citizens. It should convince any one of the necessity for an all-time health officer in every county, in every state in the Union.

The physicians of Tuscaloosa County, about a year ago, persuaded their commissioners to appropriate money for an all-time health officer and Dr. Durrett, a graduate of Harvard, was brought from Florida to fill that position. Dr. Durrett's work has been so successful that, as a business proposition, the city and county of Tuscaloosa have given him as an all-time assistant, a graduate sanitary engineer, and it is proposed to eradicate malaria and typhoid, as well as to protect the citizens from all other preventable diseases, in the county in which Alabama's great University is located.

The medical profession of every state in the union should unite in working for all-time health officers. With a trained sanitarian in every county in the South, malaria, which has given our region the reputation for being unhealthful, can soon be eradicated. When that is accomplished the stream of emigration will be turned Southward and with the development of our wonderful agricultural and mineral resources will come a prosperity that will make the South the region of the earth supremely blest.

AMERICAN-MADE SALVARSAN (ARSENOBENZOL).

Since the beginning of the European conflict, it has become more and more difficult to obtain that boon to humanity and promoter of public health, salvarsan. Fabulous prices have been charged for this almost indispensable drug and many have been deprived of its use altogether.

Dr. Jay F. Schamberg, Director of the Department of Dermatological Research of the Philadelphia Polyclinic, while engaged in some experimental work on the arsenical compounds, incidentally reproduced salvarsan and a number of allied arsenobenzol products. Feeling that no court of equity would issue an injunction against the manufacture and sale of a drug so necessary to the saving of life and the conserving of the public health at a time when such drug could not be supplied by the patentees, the director of the laboratories has decided to offer this product to the profession.

In a late issue of the Journal of the American Medical Association an article appeared reporting the results obtained by the use of the drug as it is distributed by the Philadelphia laboratories. The news that an efficient duplicate of the German-made product is readily obtainable in this country will be welcomed by both physicians and laity.

There is not money enough to buy a line of editorial space in THE SOUTHERN MEDICAL JOURNAL, but we feel that our thousands of readers are interested in obtaining salvarsan so that, without any request from the manufacturers, but at the suggestion of a progressive and broad-minded Birmingham physician, we announce that arsenobenzol may be obtained at $2.50 for 0.4 gram from the Dermatological Research Laboratories, 1818 Lombard street, Philadelphia, Pa.

THE DEATH OF DR. RODMAN.

The news that Dr. W. L. Rodman, President of the American Medical Association, had died of pneumonia, after a brief illness at his home in Philadelphia, came as a great shock to his thousands of friends throughout the South. It had been but a short time since many of us had seen him in the full power of vigorous manhood at the Dallas meeting of the Southern Medical Association. His paper on that occasion before the Section on Surgery on "Ulcer of the Stomach" was considered one of the ablest contributions to the surgical treatment of gastric ulcer. His address before the general session on the proposed increase in the medical department of the United States army was authoritative and convincing. Having been a surgeon in the United States army and knowing the needs of its medical corps, he presented the resolutions urging Congress to provide for an adequate medical department of the army. Dr. Rodman, on the same occasion, discussed another subject which might almost be called the child of his brain, "The National Board of Medical Examiners," and it was due to his influence, more than to any other man, that such a board has been created. His eloquent address at the banquet given the visiting physicians by the Dallas profession was a gem of oratory and breathed a spirit of affection for the medical profession in Texas—a state in which he had lived—as well as for the physicians in the South and of the nation.

Dr. Rodman was born and reared in Kentucky and practiced his profession for many years in Louisville. He always spoke with pride of being a Southerner. Dr. Rodman attained great distinction as a surgeon. He was Professor of Surgery in the Medico-Chirurgical College of Philadelphia, where he also enjoyed a very large practice in general surgery. His operation for cancer of the breast is known wherever surgery is practiced, and he made many valuable contributions to medical literature. In recognition of his prominence in the medical affairs of the nation he was in 1914 elected President of the American Medical Association.

Dr. Rodman was one of the greatest American surgeons and was beloved by the thousands who knew him. In his death the medical profession loses one of its ablest members and a leader who had large plans for the development of American medicine. He ardently favored a National Department of Public Health, but realized that the time was not propitious for urging such legislation before Congress, though his friends knew that at the auspicious moment he intended, with all the ardor of his fervent nature, to work for what he believed to be the greatest need of the nation. Dr. Rodman is survived by his widow, two daghters, Miss Virginia Rodman and Mrs. Lincoln Godfrey, Jr., and his distinguished son, Dr. J. S. Rodman, who was associated with his father in the practice of surgery.

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA.

Two years ago the Council on Medical Education of the American Medical Association reported that the medical schools of the South, more than any other section of the country, had made the greatest progress in raising their standards. Many Southern medical schools have gone out of existence and many more have merged with other medical colleges to form stronger and better endowed institutions until today there are very few medical colleges of low standard in the South. Perhaps no medical school in the region known as the South has had a larger development along broader lines than the Medical College of the State of South Carolina located at Charleston. Indeed, Dr. Robert Wilson, Jr., its Dean, and his confreres, have

achieved remarkable progress in medical education. It is, therefore, gratifying to the friends of this institution and to the medical profession generally that the splendid work which has been done by this school has been recognized by its having been placed in Class A in the recent classification of the Council on Medical Education of the American Medical Association. Further recognition of the standing of the Medical College of the State of South Carolina among medical educators is its election to membership in the American Association of Medical Colleges. A few years ago this institution was an independent medical school, but Dr. Wilson and his confreres succeeded in having it made a state institution and the South Carolina legislature appropriated a considerable sum for its buildings, equipment and maintenance. The citizens of Charleston raised a large amount of money as an endowment to the Medical College of the State of South Carolina and also erected, and placed in charge of the college faculty, the splendid Roper Hospital. With such great improvements in its medical school a brilliant future for medical education in South Carolina is assured.

THE COMPARATIVE SIZE OF THE SOUTHERN MEDICAL JOURNAL.

The desire to be appreciated is always laudable, therefore a few words calling attention to the size, and amount of reading matter, presented by this JOURNAL as compared with some other journals whose subscription price is much greater than ours may be allowable. For we say to our readers: This is your JOURNAL. It is your contributions and your money that have made it, and we want you to be proud of the work of your hands! A recent analysis of one of the most pretentious medical monthlies published in this country, one that presents a much more impressive appearance than yours because of thick paper and small letter pages, shows that there are 164 pages. Upon each page there is an average of 360 words, in 10-point type, leaded. This amounts to 59,040 words in the entire journal. Placed side by side, your JOURNAL seems to be only about half as large, but a careful analysis reveals 93 pages with 57 lines of 10-point type solid, and 14 words to the line. This amounts to 74,214 words in the entire issue, if it were all printed in 10-point type; but the discussions and abstracts are in 8-point solid, which gives 300 more words to the page. In other words, your JOURNAL contains more than 25% more matter than the high-priced journal, and costs about half as much.

Moreover, the quality of your articles, printed in your JOURNAL, is not surpassed in practical value by those in the apparently larger publication. This is a large claim, but we will give the name of the journal in question to any subscriber who asks for it, and he can count for himself.

BOOK REVIEWS

Cancer of the Stomach. A Clinical Study of 921 Operative and Pathologically Demonstrated Cases, by Frank Smithies, M.D., Gastroenterologist to Augustana Hospital, Chicago; with a chapter on the Surgical Treatment of Gastric Cancer, by Albert J. Ochsner, M.D., Professor of Clinical Surgery in the University of Illinois. Octavo of 522 pages with 106 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Cloth, $5.50 net; half morrocco, $7.00 net.

This monograph is essentially an analysis of the facts observed in the study of a large group of cases of gastric cancer and is a very complete presentation of the subject. The author goes quite extensively into the pathology, symptomatology and diagnosis and offers some interesting data in the chapter on the Significance of Gastric Ulcer with Respect to Gastric Cancer. Exploratory laparotomy is urged in all cases of recurring chronic calloused ulcer and, basing his plea on the fact that in such a great proportion of these ulcers microscopic alterations lying in the tissue at the edges and base is the only sign of malignancy, he advocates routine excision. The stand is taken that the X-Ray is seldom of diagnostic value since

it too is doubtful in clinically dubious cases; its use, however, is admitted to define the extent of involvement and complications existing and in this capacity to indicate the advisability of surgical interference. Dr. Ochsner's chapter on the surgical treatment of this condition presents the operative technique in detail and is illustrated by very comprehensive cuts. The information concerning the pre- and postoperative management is also valuable. This is a valuable addition to the literature on a subject which has been so prominent in medical thought and discussion.

The Mulford Digest. Vol. III., No. 2.

The Journal acknowledges the receipt of a truly elegant publication of some fifty pages bearing the above name. It is illustrated with numerous engravings delicately tinted in natural colors, they being accurate copies of photographs in color taken by the latest improved process. They represent landscapes, buildings, animals, laboratory equipments and there are two pictures showing the difference between the luetin reaction in a case in the secondary stage of syphilis and in another of hereditary syphilis. Every color, shade and tint is an exact representation of typical, positive luetin reactions in such cases.

Though the booklet is intended to describe and illustrate the Mulford preparations it has an educational value far greater than its advertising features and which entitles it to the consideration of this Journal notice.

It is published by H. K. Mulford Company, Philadelphia, and sent free to physicians upon request.

SOUTHERN MEDICAL NEWS

ALABAMA.

At Gadsden Dr. Camp, County Health Officer, showed in his annual report that more deaths resulted from pneumonia than from any other disease, there being 30 from that cause, 7 from tuberculosis, 7 from heart failure, 7 from cancer, 5 from typhoid fever, 5 from pellagra, and 5 from paralysis. There were 1,005 births and 449 deaths in the county.

The city budget for Mobile provides $11,000 to meet the expenses of the health department for the fiscal year. The police department provides an officer at its own expense for guarding the water front against the introduction from ships of rats possibly infected with plague.

At Montgomery, the Anti-Tuberculosis League reported, March 3d, that in one week 28 new members had subscribed and $383 in cash was collected.

At Huntsville, March 6th, Dr. T. E. Dryer, City Health Officer, resigned the office, as no salary was atached to the position and the duties required a great deal of his time. The Madison County Medical Society accepted his resignation and declined to elect a successor, as no member would accept the honor.

State Health Officer, Dr. W. H. Sanders, has mailed letters to all health officers of the state calling attention to the importance of this phase of their work, and to all doctors in the state calling upon them for prompt and complete reports as required by law.

At Mobile the "Better Baby" movement has been enthusiastically supported. In one week more than fifty babies were weighed and examined and short lectures were delivered by prominent nurses and physicians.

The Lee County Medical Society has elected the following officers: President, Dr. Isham Kimball, Auburn, Ala.; Secretary-Treasurer, Dr. M .D. Thomas, Opelika, Ala.; County Health Officer, Dr. C. H. Cooper, Opelika, Ala.

The sixth mid-year meeting of the Medical Section of the American Life convened at the Tutwiler Hotel, Birmingham, Ala., on March 1, 2 and 3, Dr. Whitfield Harral, chairman. The selection of the next place of meeting was not made, but Richmond has issued an invitation. The following officers were elected for the ensuing year: Chairman, Dr. F. W. Foxworthy, Medical Director Indiana National Life, Indianapolis, Ind.; Vice-Chairman, Dr. J. P. Lumer, Jefferson Standard Life, Greensborough, N. C.; Secretary, Dr. F. L. B. Jenney, Federal Life Insurance Company, Chicago; Board of Managers, the three above-mentioned and Dr. G. W. Wollen, American Central Life, Indianapolis, Ind; Dr. C. M. McCord, Minnesota Mutual Life, St. Paul, Minn.

Deaths.

On March 3d Dr. James L. Darwin, of Huntsville, died in Memphis of heart disease.

At Montgomery, Feb. 15th, Dr. Neil Baker Sewell, of Buyk, aged 64, died in an infirmary.

At Clinton, Dr. Samuel Mathews, who graduated in medicine at Mobile last June, receiving the highest prize, dropped dead from excitement while cranking his car to hurry to the home of his mother, which was in flames some distance away.

ARKANSAS.

At Prescott, February 26th, Dr. Mento Bell, of Blevins, was operated upon for pressure on the brain, and improved as a result. Dr. William Sharpe, a neurologist of New York, performed the operation.

At a meeting of the Social Service Club at the Little Rock City Hospital, Dr. F. B. Young, former superintendent of the State Hospital for Nervous Diseases, in an address stated that pellagra had spread more rapidly than any other disease in Arkansas in the last few years and constituted a growing menace to the public health. In 1909 there were only a few cases in the state. In 1915 the number was estimated at between 12,000 and 15,000. He considered the disease infectious to a certain extent.

Deaths.

At Fort Smith, February 21st, Dr. G. W. Smith died at his home, aged 76.

At Little Rock, February 22d, Dr. W. H. Lennox, of Rogers, died at the home of his daughter, Mrs. John R. Frazer, at the age of 79.

At Bentonville, Feb. 22d, Dr. N. B. Cotton died at his home, aged 69.

FLORIDA.

At Pensacola bacteriological tests of oysters taken from Bayou Texar have shown that they are contaminated with colon bacteria, probably from the Romana street sanitary sewer which empties into the bayou. There are cases of typhoid fever in Pensacola supposed to be caused by the infected oysters. Citizens are advised by Dr. S. R. M. Kennedy, member of the State Board of Health, to eat no oysters in the raw state.

Registrars in Florida complain of suffering inconvenience by the failure of physicians to promptly file certificates of births and deaths, as required by the state law for vital statistics.

The National Anti-Tuberculosis League, according to Dr. M. A. Vise, their representative, is asking the county commissioners of Hillsborough county to donate enough land on which to construct a tuberculosis hospital, and Dr. Vise proposes that the league will donate $6,000 with which to erect the institution.

The State Board of Health is supplying antityphoid vaccine and other antitoxins to the people at greatly reduced rates, distributing them to pharmacists and allowing them to charge only 25% on the actual sales. The prices are printed on the packages. The indigent receive them free of cost.

GEORGIA.

Decatur has led in the sale of Red Cross seals in Georgia in the 1915 campaign, exceeding the per capita sales of Atlanta by nearly two to one, the figures being, per capita, 5.5 for Decatur and 2.58 for Atlanta. There was a net increase of receipts in the state of over $2,000 above the receipts of 1914. Of this money 10% of the entire sum goes to the national association, 10% to the general state fund, while 80% is used by the local organization.

At Atlanta, March 6th, Dr. M. C. Martin was elected by the council unanimously to the position of City Prison Physician.

At Atlanta, Dr. S .H. Green, holding the rank of captain for twenty-three years in the Fifth regiment, National Guard of Georgia, has retired from active service to become a member of the state medical reserve corps.

The physicians of Atlanta are making an effort to secure a bond issue of $500,000 to make needed improvements and enlargements at Grady Hospital.

Dr. Emory Park, of the State Board of Health, has visited Thomasville, and recommends that the grand jury appoint a district health commissioner to supervise the work of sanitation in the county.

At Moultrie, late in February, Dr. W. W. Massey and Dr. Dunn were thrown from their overturned car while hurrying to an urgent surgical case and Dr. Massey was painfully injured.

At Savannah, March 11th, Dr. J. A. Usher was called by telephone, but on arriving at the specified place found no patient. He immediately returned to his office and saw a negro man with a bundle retreating from a door in the rear of his residence. He fired after the retreating burglar, but failed to stop the man with his plunder.

The superintendent of county schools in Floyd county has offered two gold medals to the two pupils who write the best articles on health subjects. The U. S. Public Health Service began a health survey of the county on March 18th.

Deaths.

On March 14th Dr. Bernard Wolff, of Atlanta, died at his home, aged 48.

On Feb. 20th Dr. Oscar Morris, of Rockmart, died at his home.

On Feb. 12th Or. Oscar G. Singleton, of Fort Valley, aged 58, was instantly killed by the overturning of his car.

On Feb. 12th Dr. Thomas L. Deckle, of Thomasville, aged 73, died at his home from pneumonia.

On Feb. 4th Dr. W. D. Wright, Powder Springs, aged 66, died at his home from cerebral hemorrhage.

On Feb. 13th Dr. Eugene H. Brice, of Atlanta, aged 25, died at sea and was buried in the gulf.

KENTUCKY.

At Madisonville, March 4th, the free clinic for the treatment of trachoma completed its work and closed. Fifty cases were examined and fifteen operations were performed.

At Louisville, the County Health Officer and patrolman are continuing their war on unmuzzled dogs roaming at large. Over 15,000 dogs have been picked up and dispatched during the last four years, yet cases of rabies occasionally appear. It is more serious in the country than in the city.

At Paris, Dr. A. H. Keller, Town Health Officer, has directed that a number of bodies interred in the Paris colored cemetery be taken up and reinterred at the depth required by law. Dr. Keller states that for some time the dead in this cemetery have been bried with only a few inches of dirt covering the box.

At Maysville, Feb. 26th, the doctors of Lewis county organized a medical society, electing Dr. L. A. Grimes, President; Dr. P. B. Ginn, Vice-President; Dr. H. M. Bertram, Secretary-Treasurer.

At Madisonville, Feb. 25th, Dr. R. F. Robinson, second assistant physician at the Western State Hospital, resigned his position to take up the regular practice of medicine.

At the meeting of the Winchester Board of Education, Feb. 25th, Dr. George Doyle was elected Physical Examiner of the pupils of the public schools for all of next year.

At Louisville, the Board of Trustees of the Highland Park Graded School, sought an injunction against the County Board of Education from enforcing vaccination of school children. Judge Samuel B. Kirby overruled the motion, and an appeal was taken to the appellate court.

(Continued on page 22)

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(Continued from page 382)

At Henderson, Feb. 10th, Dr. James H. Letcher resigned his position as a member of the County Board of Health, giving pressure of private business as his reason.

Drs. C. A. Fish and J. G. South, both of Frankfort, upon returning from a meeting of the State Board of Health, report that the licenses of two physicians, one white and one colored, were revoked by the board for illegally prescribing.

Deaths.

At Versailles, Feb. 22d, Dr. Hiram R. Arnett, aged 82, died after a long illness.

At Louisville, Feb. 21st, Dr. Loomis Blanton, aged 33, died at his home.

At Beech Grove, Feb. 20th, Dr. P. W. Cooper died sudenly of heart failure.

On Feb. 14th, at Robards, Dr. Elijah Arnett died at his home, aged 68.

At Louisville, March 11th, Dr. J. K. Van Arsdale died at the home of his son, aged 67.

On Feb. 18th, Dr. Henry Ford, of Paducah, aged 80, died at the home of his daughter, Mrs. Laura King.

On Feb. 4th Dr. Lewis A. Davis, of Berea, died at his home, aged 41.

On Feb. 5th Dr. Charles E. Scholes died at his home in Lowes.

LOUISIANA.

In New Orleans all school children who have never been vaccinated, or at least since seven years ago, must be vaccinated before they can enter the public schools. The number thus liable is estimated at 800.

A city ordinance recently passed requires the owners of vacant squares and unused lots to keep the weeds out. The directors of the Louisiana State Hay Fever Prevention Association have arranged to have this work done for the privilege of having the land used temporarily for cultivation. They are to be used in connection with the public schools to teach the children elementary knowledge of growing vegetables, fruits and flowers.

An addition has been made in the rear of the main building of the Charity Hospital. It will accommodate 25 tubercular patients.

Mrs. Walter Flower, chairman of the health crusade of the Anti-Tuberculosis League, reports that the league is earnestly in favor of obtaining the old Mint building for the establishment of a home for third-stage consumptives.

On Feb. 12th the City Board of Health ordered the closing of the Milneburg kindergarten school because of the discovery of a case of diphtheria in the family of the man who is keeper of the building and grounds.

At Shreveport, at the request of Dr. G. C. Chandler, City Health Officer, Mayor S. A. Dickson has issued a proclamation establishing March 19th to 25th, inclusive, as home-screening and cleaning-up week.

The Fourth District Medical Society, comprising the physicians in the four congressional districts of Louisiana, have organized with Dr. C. H. Irons, of Benton, President; Dr. C. E. Egerton, Coushatta, First Vice-President; Dr. J. L. Kimbell, Shreveport, Second Vice-President; Dr. A. A. Herold, Shreveport, Secretary-Treasurer. The council is composed of the seven various parish societies in the district.

Lake Charles announces that Dr. Dowling has declared the water supply of Lake Charles is entirely free from dangerous germs and that the parish, Calcasieu, is in satisfactory shape and free from epidemics.

Dr. Clarence Pierson, Superintendent of the East Louisiana Hospital for the Insane, has filed suit for $100,000 damages against the Times-Picayune for statements injurious to his character.

The suit of the Chattanooga Medicine Company against Dr. Oscar Dowling for $25,000 damages because of his designating "Wine of Cardui," as a nostrum has resulted in a mistrial on account of the illness of two of the jurymen.

Dr. Rudolph Matas, Professor of Surgery, Tulane University, delivered the "Mutter Lecture" on Friday ,Feb. 18, 1916, at the College of Physicians of Philadelphia. The lecture was followed by a reception at the Rittenhouse Hotel, which was attended by the elite of the medical profession and other distinguished guests. The lecture, on "The Surgical Treatment of Aneurism," was profusely illustrated with lantern slides and original drawings. The "Mutter Lectureship" was founded by Dr. Thomas Dent Mutter, Professor of Surgery at Jefferson College, a legacy from whom provided for the establishment of this lectureship and the now historic museum which bears his name. The Mutter Lectures have been an annual institution since 1865; and the selection of the lecturers has been from among the foremost surgeons and surgical teachers in this country.

The American Medico-Psychological Association will hold its annual meeting at New Orleans April 4-7, 1916. A large attendance of distinguished alienists and neurologists are expected to attend this important convention.

Dr. Robert H. Blackman announces his removal to Shreveport with offices in the Commercial National Bank building.

Deaths.

At New Orleans, Feb. 18th, Dr. Angelo Maestri died at his home.

In Baton Rouge, Jan. 23d, Dr. Thomas G. Singletary died at his home, aged 55.

On Feb. 2d Dr. Thomas C. Hightower, of Campti, died at his home, aged 41.

On Feb. 15th Dr. Richard H. Hanchey, of Sugartown, was shot and instantly killed.

On Feb. 17th Dr. Erastus J. Lyons died, aged seventy-six.

MARYLAND.

At Baltimore, a Mr. Charles H. Toner has petitioned the City Court for a writ of mandamus requiring the Health Commissioner, Dr. John D.

(Continued on page 24)

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(Continued from page 22)

Blake, to grant him a permit to sell milk in the basement of 919 Hillen street. In his answer Dr. Blake denies that the sanitary and hygienic conditions of the premises are of the best and denies also that the regulation is arbitrary or unreasonable.

Grippe and pneumonia caused the death of 105 persons in the city in the month of February. There were 70 deaths from apoplexy, 38 from cancer, 118 from heart diseases, 67 from Bright's disease, 6 from suicides and 26 from accidents. There were 973 new cases of measles, with 7 deaths.

At the Hebrew Hospital, Dr. Harry J. Moss took charge, succeeding Superintendent Mason R. Pratt. In response to notice by the City Health Commissioner that he would prosecute physicians, midwives and hospitals failing to make prompt reports of babies born under their care, the records of births in Baltimore made up at the Health Department in February are said to be complete for the first time.

Miss Eleanor A. McI. Jones, who resigned from the head of the tuberculosis health department, has gone to Rochester, N. Y., as welfare agent of the Monroe County Tuberculosis Hospital.

Dr. Charles H. Brooke, health physician of the fifth district of Anne Arundel county, has complained to the County Commissioners about the condition of the sewers in Brooklyn. The sewerage is allowed to run upon an open field and is a source of great complaint.

The staff of federal and state physicians, working jointly, is making a medical survey of the schools in Frederick county and three other counties.

The steamship lines running to Baltimore have declared their willingness that the federal government take control of quarantine, as proposed by Dr. James A. Nydegger, of the U. S. Public Health Service.

The Bureau of Census is sending out through the Maryland Association for the Prevention and Relief of Tuberculosis figures which show that in the decade from 1904 to 1914 the death rate from tuberculosis made a drop of 25%.

Deaths.

At Baltimore, March 2, Dr. G. L. Taneyhill died at his home, aged 75.

At Frostburg, March 2d, Dr. Timothy Griffith, aged 52, died of Bright's disease.

At Baltimore, Feb. 19th, Dr. Thomas Shearer died at his home, aged 91.

On March 8th, Dr. Joseph L. Rathie died at his home in Cockeysville, aged 44.

At Annapolis, Feb. 18th, Dr. James Mercer Garnett died at his home, after a brief illness.

On Feb. 18th Dr. J. McKendree Kemp, of Welcome, aged 79, died in Johns Hopkins Hospital after an operation.

MISSISSIPPI.

Dr. Pinault, of Pass Christian, has been decorated by His Holiness, Benedict XV, Commander of the Knightly Order of Gregory the Great on account of services rendered many years ago.

Dr. W. S. Leathers, director for the State Board of Health in the anti-malaria campaign in Bolivar county, states his program as follows: The campaign is progressing in a very satisfactory manner. The work has been extended to cover four communities, each with a population of 1,000, and with 36 square miles. The people are taking quinine to free their blood of the malarial parasites. There can be no question about the fact that with full co-operation of all the people malaria can be banished from Bolivar county.

At Jackson, March 5th, Dr. W. W. Smithson, Superintendent for the State Hospital for the Insane, has tendered his resignation on account of the fact that the governor has officially indicated that he will require his trustees to demand the entire time of the Superintendent.

Governor Bilbo has vetoed the Natchez hospital bill because it proposed an increase of $2,000 per year over the previous appropriation.

The Lauderdale County Medical Association has disapproved the proposition to establish one state hospital for tubercular patients. The society believes it would be better for the state to allow acertain amount to each county to enable them to establish and support a local tuberculosis camp.

At Laurel, the Board of Supervisors of Jones county awarded the contract for medical work at the county home to Dr. W. S. Cranford, with a salary of $67.50 per month.

At Laurel, Feb. 12th, it was stated that the anti-malarial campaign conducted by the State Board of Health was making rapid progress. The survey of Community No. 1 was about completed, including a blood smear from every individual in that district. The necessary quinine treatment is furnished free to each infected person.

On Feb. 18th it was reported officially that ten cases of cerebro-spinal meningitis has appeared at Louise.

The present state legislature contains only five physicians, which is said to be the smallest number in that position since the civil war.

At Columbus, the City Board of Health has been reorganized by the election of Dr. J. W. Cox as chairman and Dr. C. R. Berry secretary.

The five biggest cities in Mississippi will have their births and deaths officialy recorded by the vital statistics division of the U. S. Census Bureau in Washington, and these will be included in the reports issued at irregular intervals by the department. The cities included are Jackson, Meridian, Hattiesburg, Vicksburg, and Natchez.

Deaths.

Dr. A. T. Green, of Abbeyville, died at Hot Springs, Miss., at the depot as he was purchasing a ticket to return to his home.

On Feb. 15th Dr. L. W. Finch, of Eupora, died at his home, aged 36.

NORTH CAROLINA.

Dr. W. S. Rankin, Secretary of the State Board of Health, urges an amendment to the charter of Raleigh establishing a City Board of Health and authorizing the employment of a health officer, city physician, sanitary inspectors and public

(Continued on page 26)

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On cuts, burns, bruises,

Lacerations, abrasions.

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31 Different Varieties

Typhoid Fever

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You'll advise these, after trial, in place of branless wheat foods.

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Pettijohn's Breakfast Food—A soft wheat rolled into luscious flakes, hiding 25 per cent unground bran. A morning dainty liked by everyone. 15c per package.

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(Continued from page 24)

nurses. His estimate of the annual cost was $34,000.

Dr. J. M. Crawford is conducting the medical inspection of the children of the Orange Street school, at Asheville, under the auspices of the Parent-Teacher Association and parents generally are giving their hearty co-operation to the movement.

Deaths.

On Feb. 1st Dr. J. W. Blackmer, of Sykesville, Md., died at the home of his mother in Salisbury, aged 28.

OKLAHOMA.

On Jan. 13th, at Tusla, the Tusla Academy of Medicine enjoyed a banquet at the Mecca cafe. Dr. W. W. Brodie was toastmaster. Dr. W. Forest Dutton, President, "deplored the fact that fully one-fourth of the surgical work done here was done by physicians from other cities." The following officers were elected for the ensuing year: Dr. Robert S. Wagner, President; Dr. Ralph V. Smith, Vice-President; Dr. Paul N. Atkins, Secretary-Treasurer.

Governor Williams has appointed Dr. J. U. Williams, of Weatherford, a member of the State Board of Medical Examiners in the place of Dr. Leroy Long, of McAlester, resigned.

SOUTH CAROLINA.

Dr. F. A. Coward, Director of the State Laboratories at Columbia, after examining the glasses sent him from a Greenville soda fountain, found that they would show cultures of micro-organisms, some of which are dangerous. Germs of some kind were on all of them.

Rev. R. E. Wynne, temporarily acting in the absence of Surgeon Lumsden, of the United States Public Health Service in North Carolina, states that the surgeons will distribute valuable literature concerning typhoid fever at every home visited. He says: "If this literature is carefully read the reader will be as thoroughly informed regarding typhoid fever as the average physician." Booklets on the care of the baby and on pellagra will also be distributed.

At Greenville a committee appointed to investigate the public schools of the city reported that conditions at the public schools are greatly improved, though some additional improvements were recommended. At some schools where fire drills were given all pupils were out without confusion in less than 90 seconds.

Deaths.

On Feb. 18th, Dr. Thomas Shearer, formerly a practitioner of Charleston, died at his home, aged 90.

On Feb. 4th Dr. William Kneece died at his home in Baxter, aged 64.

On Feb. 9th Dr. Wm. W. Anderson died at the home of his daughter in Summerton, aged 71.

On Feb. 7th, Dr. M. W. Smith died at his home in Charleston, aged 80.

TENNESSEE.

According to the report of Dr. H. H. Shoulders, state registrar of vital statistics, 4,499 died from tuberculosis in this State during 1915. California and Kentucky alone have a higher death rate from this disease. It is estimated that 45,000 people in Tennessee have tuberculosis in its various stages of advancement.

City Health Officer W. E. Hibbett, of Nashville, in a recent lecture claimed that the death rate from typhoid fever in that city is higher than in any other city of its size in the United States. During 1915 there were 417 cases and 44 deaths. Dr. Hibbett claims that in the "typhoid" wards of the city the poison came from the contaminated springs and wells. The city's water supply furnished by the pumping plant is pure and nearly perfect.

At Kingston, Feb. 24th, a Dr. J. S. Anderson was fined $20 and cost in each of six cases on the charge of practicing medicine without a license.

The Lawrence County Medical Society, at Lawrenceburg, has organized with the following officers: Dr. W. M. Gallaher, President; Dr. Thomas J. Stockard, Secretary.

The Henry County Medical Society reorganized with the following officers, Feb. 22nd: Dr. G. T. Abernathy, President, and Dr. J. H. McSwain, Secretary.

At Cleveland, Dr. Carl T. Speck, who recently examined the ears and throats of pupils in the schools of Bradley County, estimates that 60 per cent of the rural children aged from 6 to 20 have either ear or throat trouble, frequently adenoids; that ten per cent of the children with adenoids carry living, tubercular germs in the adenoid tissues; that such cases amount to about 20 per cent of the children in the country and that they drop out of school between the ages of 8 and 12.

At Nashville, March 2nd, the Secretary of the Tennessee Associated Charities has removed headquarters from the Minnis Building, on Wall Avenue, to 309 Market Street, south of the Lawson-McGhee Library.

Dr. J. M. Oliver, superintendent of the Davidson County Tuberculosis Hospital, has tendered his resignation to Mayor Ewing, and it was accepted.

At Waverly Supt. G. W. McKeel and Dr. A. J. Mackin have resumed the examination of the mouths of school children in the county. About 700 children were previously examined and 127 cases of irregularities in teeth, capable of correction, were discovered.

Mayor Ewing, of Nashville, is strictly enforcing the ordinance against spitting on street cars and on the sidewalk and is posting notices to that effect on the streets and in the cars.

The leading life insurance statistician of the United States, Frederick L. Hoffman, of the Prudential, writes in the Spectator of Dec. 23rd, 1915: "The highest murder rate for 1914 was again reported for the city of Memphis. The actual rate was 72.2 per 100,000 of population, against 63.7 for the previous decade." Dr. R. B. Maury made a motion, which was adopted, that the health department be requested to invite Mr. Hoffman to Memphis to make a scientific study of the situation."

Deaths.

At Sparta, Feb. 19th, Dr. R. F. Baker died at his home, aged 70 years.

(Continued on page 28)

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They are sealed in huge guns. Then revolved for an hour in 550 degrees of heat. Thus comes that fascinating flavor.

The atom of moisture inside of each food cell is changed to superheated steam. When the guns are unsealed that steam explodes, blasting the food cell to pieces.

Every food cell in every coat of the grain is thus fitted for easy digestion. In every grain there occur over 100 million explosions.

That puffs the grains to eight times normal size. It makes them bubble-like and crisp and flaky. But it leaves the grains shaped as they grew.

This process—Prof. Anderson's process—results in the best-cooked cereals in existence. In some diet lists this fact is vital. In all it is important. The more you know of Puffed grains the more you will respect them.

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Puffed Wheat Except in Far West 12c
Puffed Rice 15c
Corn Puffs—Bubbles of Corn Hearts—15c

(Continued from page 26)

At Chattanooga Feb. 18th, Dr. D. H. Hall, aged 85, died at his home from pneumonia.

At Rankin, on Feb. 18th, Dr. Chesley Roadman, aged 56, died at his home from paralysis.

At Lawrenceburg, Feb. 28th, Dr. William J. Stockard died at his home, aged 65 years.

TEXAS.

At Abilene, March 5th, a free medical dispensary was opened in the new county court house in one of the basement rooms. The doctors of the town contribute their services to this work without pay. As usual it is the women who have put this enterprise into working shape, and they are very much encouraged with the outlook for public health work.

At Austin March 1st the Court of Criminal Appeals affirmed the judgment of the lower court in the case of David B. Teem, a chiropractic from Grayson County, convicted of practicing medicine without a license and fined $100 and sentenced to serve six days in jail.

Deaths.

At Gatesville, March 9th, Dr. U. M. Gilder, aged 75, was found dead on the floor of his home, with a bullet wound in his head and a pistol in his hand. He lived alone.

At McGregor, March 13th, after an illness of many months, Dr. J. E. Brown died at his home. He was an aged man.

VIRGINIA.

At Richmond, March 4th, the legislature, in the House, passed a resolution for the appointment of a legislative committee to report to the next General Assembly on the question of consolidating the medical department of the University of Virginia and the Medical College of Virginia.

The Richmond Health Department has a placard displayed at the Baby Welfare Exhibit, as follows: "There is now an epidemic of measles in Richmond. This disease is very fatal to babies under three years. Keep your young baby away from crowds and from other children as much as possible during the next three months."

On Feb. 28th James E. Phillips, Jr., sent in his resignation as a member of the City Board of Health of Richmond. He had been a member since 1906.

On Feb. 17th the House killed the bill providing for a license tax on physicians by a vote of 57 to 24.

In Greenville County there has been a great revival of public interest in public health matters. The State Board of Health has been conducting a campaign against hookworm, typhoid and malaria. There is a movement for an all-time health officer.

The eighteenth annual meeting of the Tri-State Medical Society of the Carolinas and Virginia was held in Richmond, Va., February 16 and 17 under the presidency of Dr. James H. McIntosh, Columbia, S. C. The following officers were elected: President, Dr. J. Allison Hodges, Richmond; Vice-Presidents, Drs. Chas. Laughinghouse, Greenville, N. C.; Harvey E. McConnell, Chester, S. C., and William F. Drewry, Petersburg, Va.; Secretary-Treasurer, Dr. Ralfe E. Hughes, Laurens, S. C. (re-elected). Drs. John N. Upshur, Richmond, Va.; J. Howell Way, Waynesville, N. C., and Julius H. Taylor, Columbia, S. C., were elected members of the executive committee. Durham, N. C., was selected as the next place of meeting.

Deaths.

At Lynchburg March 6th Dr. Frederick Jacoby died at his home, aged 86 years.

At Herndon, Feb. 29th, Dr. E. L. Detwiler was shot dead by a farmer named Rosier.

At Fredericksburg Feb. 20th, Dr. Ralph Hill, of Stafford County, died in the Mary Washington Hospital, after a surgical operation, aged 30 years.

WEST VIRGINIA.

Dr. O. L. Aultz, city health commissioner of Charleston, in his report for February shows there were 48 deaths in the month. Very few cases of contagious diseases were reported.

The local Red Cross Society of Parkersburg reports the sale of seals amounting to $325. This is the share of the proceeds which belongs to the local society. Share of the national society is $90.

Dr. Harriet B. Jones, of Wheeling, has been employed by the State Board of Regents as medical inspector and is now on a tour of various state schools examining the girls attending. She devotes at least 20 minutes to each girl, then tells her what is her physical condition and what steps should be taken.

The Health Department has secured an emergency chlorinating plant of portable size for the use of Engineer Tolman in towns where outbreaks of typhoid fever may be traced to water supplies, to be used until a permanent plant can be supplied at that place.

At Fairmont the Board of Health reports a death rate for the past year of only 11.3 per thousand, and they are planning to secure a lower rate this year.

The physicians of Ohio County reported only 418 births during 1915 though a total of 1,442 births were reported to the court during the year.

Dr. S. L. Jepson, State Commissioner of Health, declares that the unboiled water from the Ohio river which is served to the school children of Wheeling is unsafe and that the local filters often render the water more polluted instead of purifying it.

Deaths.

At Charleston March 11th news was received of the death of Dr. J. L. Stump, a physician of that city, at Titusville, Fla. His age was 62 years.

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Cargentos appears as lustrous black scales freely soluble in water. Solutions of Cargentos are not precipitated by sodium chloride or albumen, and this, together with their high specific gravity, due to the large silver content, increases their penetrating power.

Cargentos has a greater bactericidal power than carbolic acid. No other silver salt of equal bactericidal properties can be applied in such concentrated solutions without causing irritation. For this reason Cargentos is particularly indicated in ophthalmic treatment.

Cargentos is especially valuable in Roentgenography on account of non-toxicity and the absence of irritating properties. Dr. A. A. Uhle, Dr. George A. Pfähler, and others, use Cargentos "extensively in urethral and bladder affection, and find it non-irritating in 50 per cent strength." (See Annals of Surgery, April, 1910, page 546.)

Cargentos is an excellent antiseptic in gonorrhea, and in all acute catarrhal conditions of the mucous membranes. It is distinctly inhibitory to bacterial development.

Supplied in 1-2 oz. and 1 oz. vials and in tablets for preparing solutions extemporaneously.

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Friedenwald and Rosenthal* state that:

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4.—It is a diagnostic agent of great value.

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Emetine Treatment of Hemoptysis.—One of the properties of Emetine is to constrict the small blood vessels. In the treatment of hemoptysis Flandin states that "the result of the injection was surprising, the hemorrhage from the lung stopping immediately. No disagreeable sensation was experienced, no palpitations, dizziness or nausea."

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In tubes of 15 mg. (1-4 grain) hypodermic tablets. In tubes of 30 mg. (1-2 grain) compressed tablets for oral administration.

*New York Medical Journal, July 4, 1914.
†New Orleans Medical and Surgical Journal, August, 1914; Dental Cosmos, December, 1914.

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Tablets Glycerophosphates Compound P-M Co.

Each tablet contains:

Sodium Glycerophosphate 1 gr.
Calcium Glycerophosphate 2 gr.
Iron Glycerophosphate 1-8 gr.
Strychnine Alkaloid 1-120 gr.

A TRUE LINE

PITMAN-MOORE COMPANY

INDIANAPOLIS

Constipation

in the artificially-fed infant most commonly arises from

Faulty protein digestion
Imperfect fat digestion
Lack of energy
Starchy diet

and is best corrected by making certain changes in the proportion of the constituents of the baby's diet.

Mellin's Food

is of much assistance in adjusting the milk mixture to meet this annoying condition, and we will take pleasure in sending, upon request, the details of the method of procedure to meet individual conditions.

Mellin's Food Company, **Boston, Mass.**

Patronize our advertisers—mention the Journal when you write them

Germicidal Soap

(Formula of Dr. Chas. T. McClintock)

Powerful antiseptic, disinfectant, detergent and deodorant.

Prepared from pure vegetable oils combined with mercuric iodide, the most powerful germicide known.

Does not attack nickeled or steel instruments; does not coagulate albumin.

GERMICIDAL SOAP, 2%:

Contains 2 % of mercuric iodide: large cakes, one in a carton.

GERMICIDAL SOAP, MILD, 1%:

Large cakes, one in a carton; small cakes, five in a carton.

For other forms see our catalogue.

SUGGESTIONS FOR USE

To prepare antiseptic solutions.

To sterilize hands, instruments and sites of operation.

To cleanse wounds (bruises, cuts, abrasions), ulcers, etc.

To lubricate sounds and specula.

To destroy infecting organisms in skin diseases (ringworm, acne, barber's itch, etc.).

To disinfect surface lesions associated with fetid discharge.

To control the itching of skin infections.

To disinfect the hands after attendance upon cases of communicable disease.

To make solutions for the vaginal douche.

To destroy the odors of offensive hyperidrosis.

To cleanse the hair and scalp.

To remove and prevent dandruff.

To disinfect vessels, utensils, etc.

To wash and sterilize bed-linen, handkerchiefs, etc., used in the sick-room.

✦ ✦ ✦

Germicidal Soap, in short, is useful whenever and wherever a powerful antiseptic, disinfectant, detergent or deodorant is required.

SPECIFY "P. D. & CO." WHEN ORDERING FROM YOUR DRUGGIST.

Home Offices and Laboratories,
Detroit, Michigan.

Parke, Davis & Co.

o.